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ABSTRACT

A project was conducted to develop a program of effective remediation in mathematics for the adolescent learner using the laboratory approach. The project addressed: (1) material development and equipment/supply selection for use within the laboratory which would address individual/small group needs; (2) identification of specific needs of individual students and development/implementation of a specific program for addressing those needs; (3) establishment of an evaluation system assessing effects of the laboratory on the individual and school program, and its relationship to students and teachers; and (4) identification of variations, additions, and improvements to insure continuation of the laboratory and strengthen the model for use by other schools and/or educational agencies developing programs for improving mathematics achievement. Reported in this document is the design, development, and implementation of the remedial mathematics laboratory. Included are discussions of a needs assessment, project objectives, the site selected, selection of the laboratory teacher and materials, and implementation efforts. Supporting documentation is presented in 11 appendices. These include West Virginia Board of Education's Basic Skills Resolution; data on 1981-82 mathematics classes; a list of materials/equipment; a mathematics assessment instrument; a sample student diagnostic record; a student prescription form; log sheets; a graphic representation of student scores; student treatment and mastery charts; graphics of the research design; and news releases. (JN)

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RALEIGH COUNTY

REMEDIAL LABORATORY

MATHEMATICS

DRAFT

For Discussion Only

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PREFACE/FOREWORD

The design, development and implementation of the Mathematics Remedial Laboratory will be discussed in this document. The intent is to present to the reader a description of the processes and products involved along with an overview of the possible applications for other schools and/or educational agencies when developing programs for the improvement of mathematics achievement.

This document is an implementation document. The evaluation document, which will provide information related to specific data and the resulting evaluation of the project, will supplement this document in giving the reader a total picture of the efforts and results. Together they serve as a model of research and development which can be of benefit to all involved in student learning of mathematics.

William Baker
Superintendent
Raleigh County Schools

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INTRODUCTION

The overall purpose of this project was to develop a program of effective remediation in mathematics for the adolescent learner using the laboratory approach. In so doing, the project addressed the following specific directions:

1. The development of materials and the selection of equipment and supplies for use within the laboratory which would address individual as well as small group needs.
2. The identification of the specific needs of the individual student and the development and implementation of a specific program for addressing those needs.
3. The establishment of an evaluation system that assesses the effect of the mathematics laboratory on the individual, the effect of the mathematics laboratory on the school's program and its relationship to teachers and students.
4. The identification of variations, additions and improvements needed to insure continuation of the laboratory and strengthen the model for use elsewhere.

The implementation of the project provided Raleigh County and the West Virginia Department of Education a model for addressing individual needs in mathematics with special attention given to an individual prescription, rather than the group approach most often used in the classroom. The successful implementation of such a project could only be achieved through total support and commitment at the county and school level combined with the technical assistance of the West Virginia Department of Education and Appalachia Educational Laboratory.

NEED ASSESSMENT

In compliance with the Educational Goals of West Virginia and the recommendations of the Mathematics Task Force, the West Virginia Board of Education passed a resolution on June 13, 1980, giving top priority to mathematics and the other basic skill areas (Appendix A). In September 1980, William Baker, Superintendent of Raleigh County Schools, and the Raleigh County Board of Education adopted the state resolution as a part of the Raleigh County policy in developing a quality educational program. Plans were then made to identify related goals and objectives and to initiate a program for the improvement of mathematics achievement.

A study of the State-County test results identified a definite need for the development of a mathematics remedial program for the adolescent learners in Raleigh County. It was then decided that this program would address the individual rather than the group needs and would be implemented using a laboratory approach.

The development of this model as a cooperative effort of Raleigh County and the West Virginia Department of Education made it possible to address immediate needs of a group of identified students at a specific site. In addition, it will serve as a model for other Raleigh County Schools, as well as other counties and/or schools, to implement where similar need areas exist.

OBJECTIVES

Having adopted the West Virginia Board of Education's resolution regarding priority status to the basic skills areas, Raleigh County decided to address the need for remediation in mathematics for adolescent students who had not mastered the basic computational skills in mathematics. The objectives for the project designed for this purpose are as follows:

1. To provide a site, personnel and materials necessary for the development of a Mathematics Laboratory.
2. To develop materials and programs designed to help the student attain success in mastering the basic computational skills.
3. To design a system that provides for the multiplier effect in relation to the implementation of objectives one and two.
4. To establish an evaluation system which will indicate the effects of the laboratory on individual achievement and the possible improvement of the mathematics program at Liberty High School. This will be developed in relation to the affective as well as the cognitive domain.
5. To publish and disseminate all products related to objectives one through four, with the assistance of West Virginia Department of Education. The laboratory organization, opportunities, options and results will give Raleigh County, as well as other counties within the state, a model for the development of a remedial program for the adolescent learner.
6. To use the evaluation report and other knowledge gained during the implementation period to make the necessary adjustments for the continuation of the mathematics laboratory at Liberty High School.

DESCRIPTION OF SITE

Liberty High School was identified as the high school which should be used in the project. The decision was made based on the following:

- In checking the percentile scores in mathematics for the past six years, it was found that Liberty's scores were consistently below the Raleigh County scores in all areas of mathematics tested. The students at Liberty High School taking the eleventh grade test in 1980-81 represent the same group tested as ninth grade students in 1978-79. The comparison of the 1978 scores with those of 1980 (Figure 1) shows a slight increase in the Raleigh County Scores, but a decrease for Liberty High School.

	1978-79		1980-81	
	Liberty	Raleigh	Liberty	Raleigh
Computations	41	50	39	51
Concepts	40	47	42	51
Applications	47	50	45	50
Total	41	48	39	49

Figure 1

- Using the Group Expanded Standard Scores the expected growth was calculated on the 1978-79 scores and compared to the actual scores for 1980-81 (Figure 2).

	9th (Actual)	11th (Expected)	11th (Actual)	Difference
Computations	517.7	553.4	549.6	-3.8
Concepts	552.8	590.2	598.9	+8.7
Applications	555.7	602.7	591.0	-11.7
Total	534.7	578.2	569.8	-8.4

Figure 2

- This comparison indicates a decline in computations and applications.

Liberty High School is located at Glen Daniel, West Virginia, about thirteen miles from Beckley. It serves a rural population supported almost entirely by mining and farming.

There are approximately five hundred students attending this four-year high school and the majority are transported. For the three credits in mathematics required for graduation, there are nine courses offered, seven of which are taught in the mathematics department (Appendix B), one in the vocational department and one in the business department. The schedule is set for a six-period day and each period is fifty-five minutes in length.

All conditions being favorable for selection, the final decision was made by Racine Thompson, Principal of Liberty High School. All those involved in the original planning and identification of a suitable site were in agreement that the project could only be successful if the principal was in agreement and committed to its implementation.

SELECTION OF LABORATORY TEACHER

Once the site was chosen, the selection of the teacher was discussed. Superintendent, William Baker was in agreement with Ernestine Capehart, West Virginia Department of Education's Mathematics Coordinator and Marilyn Stone, County Mathematics Administrator, that the qualifications for the person to be hired were to be more than regular certification requirements. The specific qualifications desired were:

- An experienced mathematics teacher who had taught most of the mathematics options from grade seven through twelve.
- A record of good rapport with students and teachers.
- Evidence of concern for the low achiever.
- A willingness to use a variety of teaching techniques and materials with students.

Those to be involved in the selection of the laboratory teacher were Ronald Cantley, Associate Superintendent; Richard Rappold, Assistant Superintendent; Marilyn Stone; Ernestine Capehart; and Racine Thompson, Principal of Liberty High School. All were involved in the interviews of persons applying with the final decision being left to the principal.

It was also decided at this point that Marilyn Stone would be the person from the Raleigh County office to work directly with the West Virginia Department of Education and the school. She and Ernestine Capehart assumed the positions of co-directors of the project.

The teacher assigned to the mathematics laboratory for the school year 1981-82 was Charlene Hart from Mullens, West Virginia.

SELECTION OF MATERIALS

The responsibility for the selection of the materials for the laboratory was left to Ernestine Capehart and Marilyn Stone. This task was completed prior to the opening of school in order that the materials would be available for the entire implementation period.

The material selection was patterned after the mathematics laboratory at Dunbar High School, Kanawha County. Those items which had proven effective at Dunbar were included in the purchase order. In addition, information regarding other outstanding materials was obtained from members of the West Virginia Council of Teachers of Mathematics, other County Mathematics Administrators and teachers who had successfully used various programs/materials in teaching basic skills. The list of these materials is contained in Appendix C.

In addition to the materials, the laboratory was to be equipped with two microcomputers, two digitors and a filmstrip projector with cassette player/recorder. All of these items were to serve as supplements, the teacher being the major functioning part of the project with a common belief among all involved that the success of the program would depend on the interaction of teacher and student on an individualized basis.

IMPLEMENTATION

The primary concern was the identification of the students to be served. This was accomplished by administering a basic computational skills test developed by Ernestine Capehart and used at Dunbar High School for the remedial laboratory and in various parts of the state as a diagnostic instrument (Appendix D). This test was given in the spring to all eighth grade students who would be entering Liberty High School.

A file card was then prepared for each individual student, stating the score and also indicating the specific skills which needed attention (Appendix E). Using this information and the assistance of Richard Davis, assistant principal, and Shelby Webb, counselor, the students were scheduled into the laboratory for a six-week period. The determination of who would be scheduled first was by random selection from the group identified as needing remediation and then by scheduling considerations. All ninth grade students with scores below 65 percent were to be scheduled sometime during the first semester (three six-week periods).

A training program was scheduled for the teacher prior to the start of school. At this time, the three closest persons involved with the actual functioning of the laboratory (Charlene Hart, Marilyn Stone and Ernestine Capehart) made plans for the implementation and the collection of data which would make an evaluation possible.

The testing procedures as well as the methods for recording the results were discussed. This was necessary in order that a simple system could be used, requiring a minimum amount of the teacher's time and yet clear enough that the recorded information was easily interpreted.

All materials and supplies were reviewed and discussed as to their relationship with the teaching of basic skills. A system of display and easy access was developed.

A form for recording individual prescriptions was designed (Appendix F). This would enable us to track progress of the individual student, identify which of the available materials were being used most often, identify the competency being addressed and the amount of work completed before its mastery.

Emphasis was placed on the use of individualized instruction rather than group instruction. It was agreed that regardless of machines or materials used in the program, the student would be taught on a one-to-one with the teacher. No self-study programs as such would be used unless it was a supplement to the teacher's direct involvement with the student.

In November, the Capehart Diagnostic Test was administered to all tenth and eleventh graders. The same procedure for identifying weaknesses was used. Those identified were to be scheduled for a six-week period the second semester. These students, along with teacher referrals and ninth graders needing additional help, were to make up the remedial classes for the fourth, fifth and sixth six-week periods.

The introduction of the microcomputers to the laboratory was a very positive experience for all. The company offered three hours of introduction to the machine for the teacher. The entire faculty was invited to attend and many of them did become actively involved. The following day the machines were placed in an office area for easy access by the teachers. Ernestine Capehart remained with them throughout the day to answer questions and assist if problems did arise. This

procedure was used to give the teachers an opportunity to try the machines and overcome the feeling of insecurity which often prevails when students become more knowledgeable than the teacher on a given topic.

The following day, the machines were placed in the laboratory and each class was instructed on their use. No attempt was made to explain any form of programming since the primary function of the machine was to make available another source of material for learning the basic computational skills. The student would only need the ability to run a program and respond to machine commands. It was also decided that no games other than those related to the skill being addressed, would be used during class time.

During the normal operation of the lab, two logs were kept. One was used for the machines (Digitors and Apples) in order to determine the time each individual student spent on the machine (Appendix G). The teacher also kept a log of her time, indicating the approximate number of minutes spent with the students (Appendix G).

At the conclusion of each six-week period, the students were tested using the diagnostic test administered earlier. This was used to check student progress and to identify those who should be scheduled for another period in the lab. The comparison of these scores are shown on the graphs (Appendix H) along with the additional score if the student was rescheduled.

In addition to the informal evaluation, a formal evaluation was conducted with the assistance of Merrill Meehan from Appalachia Educational Laboratories. This section of the evaluation was to focus on both student achievement in mathematics and attitudes toward

mathematics. The standardized instruments used in this process were Math Diagnostic Screening Test and the Revised Math Attitude Scale. The graphic of the research design is contained in Appendix J. The report of the evaluation is contained in a separate document prepared by Merrill Meehan.

The function of the co-directors during the implementation period was to coordinate the activities, assist in testing, scoring and evaluation, maintain communication and relate progress to all involved, and assist the teacher in any way possible. Meetings were held with the teacher periodically and adjustments made when necessary.

At the end of the 1981-82 school year, when the implementation period was complete, plans were set in motion to make preparation for next year's laboratory program. Requisitions were written for additional materials and supplies to improve on the program by making the facilities available to all students needing help in mathematics in the current program as well as the basic skills remediation.

In addition, a careful study will be made to determine the effect the laboratory has on the school program. A comparison will be made once again between Liberty High School scores and those for Raleigh County and between expected and actual scores for the students in the eleventh grade for the school year 1982-83. There is also some indication of an increase in enrollment in the college preparatory courses as opposed to the general curriculum.

The laboratory development and implementation were very rewarding experiences for all involved. It served not only as a model for improving student achievement, but also as an outstanding model of a cooperative effort among all who were involved. The predominant feature

was the commitment of the entire team to bring to the students a helpful and enjoyable addition to their regular school program. Any one of the individuals could have changed the outcome completely by exhibiting less than total support. This feature of the laboratory and its management team was evident to all who visited the site during the implementation period.

APPENDIX A:

WEST VIRGINIA BOARD OF FDUCATION'S

BASIC SKILLS RESOLUTION

Educational Program Elements

Horizontal Scope

Curricula

Special

RESOLUTION: IDENTIFYING THE TEACHING OF MATHEMATICS AND THE OTHER BASIC SKILLS AS THE HIGHEST CURRICULAR AND INSTRUCTIONAL PRIORITY IN THE SCHOOLS OF WEST VIRGINIA

WHEREAS, Proficiency in mathematics and the other basic skills is essential for achieving as a successful student in school and for becoming an informed, productive, and active participant in our culture and society; and

WHEREAS, There currently exists a strong interest among professional educators, parents, and the general public in the State of West Virginia in increasing both time and resources that are devoted to the teaching of and

WHEREAS, The West Virginia Board of Education adopted the Educational Goals for West Virginia on February 14, 1975, which gives the number one priority level to the mastery of skills needed for reading, writing, speaking, perceiving, and using numbers; and

WHEREAS, The West Virginia Board of Education approved The Annual Plan for the Improvement of Educational Achievement in West Virginia, 1978-79, on September 8, 1978, which provides for an extension of a maximum effort for the improvement of mathematics achievement; and

WHEREAS, The West Virginia Department of Education submitted West Virginia's Basic Skills Improvement Program to the United States Office of Education on January 17, 1980, which identifies the basic skills as mathematics, reading, and written and oral communication skills; and

WHEREAS, The West Virginia Board of Education received the Recommendations for Mathematics Education: Final Report of the Mathematics Task Force on April 10, 1979, which recommends the adoption of a resolution giving mathematics the priority indicated in the Educational Goals for West Virginia.

BE IT THEREFORE RESOLVED THAT, Begining July 1, 1980, the teaching of mathematics and the other basic skills identified in Goal #1, shall become the highest curricular and instructional priority in the schools of West Virginia. This resolution shall expand the resolution of November 14, 1975, which identifies reading and the other communication skills as the highest curricular and instructional priority. The West Virginia Department of Education, working cooperatively

with both local and regional education agencies, shall begin immediately to pursue a plan for implementing curricular and instructional practices which concentrate on mathematics, for enabling teachers and prospective teachers to improve their skills in the teaching of mathematics, and for providing for the formative and summative evaluation of mathematics education in West Virginia.

BE IT FURTHER RESOLVED THAT, County boards of education be encouraged to adopt this or similar resolutions declaring the teaching of mathematics and the other basic skills to be the highest curricular and instructional priority beginning July 1, 1980, and that the necessary resources be committed to implement this resolution.

6-13-80

APPENDIX B:

MATHEMATICS CLASSES 1981-82

MATHEMATICS CLASSES

LIBERTY HIGH SCHOOL

1981 - 82

CLASS	STUDENTS	SECTIONS	AVERAGE CLASS SIZE
General Mathematics I	121	5	24
General Mathematics II	112	5	22
Algebra I	65	3	22
Geometry	22	1	22
Algebra II	26	1	26
Trigonometry	12	1	12
Advanced Mathematics	12	1	12

APPENDIX C:

MATERIALS AND MACHINES

MATERIALS AND MACHINES

QUANTITY	ARTICLE DESCRIPTION	AVAILABLE FORM
2	Microcomputer w/48K Bytes RAM	Apple II Plus
2	Disc Drive & Interface	Apple II Plus
1	Thermal Printer/Apple II Interface	Apple II Plus
2	TV Adapter Interface	Apple II Plus
1 box	Silentype Paper (10 rolls)	Apple II Plus
1 box	Blank Diskettes (box of 10)	Apple II Plus
2 sets	Hand Controllers (2)	Apple II Plus
2	Color TV, 13" Citek	Electronix Mart
1	Projector, Dukane AVmatic	J. S. Latta, Inc.
1	Listening Center, 6 Station	Audiovisual Educational Systems
1	Storage Cabinet	J. S. Latta, Inc.
2	Digitors, Skillmasters	Vere Smith Audiovisual, Inc.
4 reams	Graph Paper	J. S. Latta, Inc.
1 box	Wooden Cubes, 1"	J. S. Latta, Inc.
1 set	File Dividers, 5" x 8"	J. S. Latta, Inc.
2	File Boxes, 5" x 8"	J. S. Latta, Inc.
2 sets	Flash Cards, Multiplication	J. S. Latta, Inc.
1	Stop Watch	Spartan Sales
1	Fractional Number Tape Program	LaPine Scientific
1	Fractions - Geometric Pieces	LaPine Scientific
1	Versa-Tiles Advanced Mathematics Lab	Versa-Tiles
1	Real Life Math Lab	Versa-Tiles
1	Posters and Problem Book	Dale Seymour
1	Basic Computations	Dale Seymour

QUANTITY	ARTICLE DESCRIPTION	AVAILABLE FORM
1	System 5 - Basic Skills Discs	Mathware
1	Computer Graphics Primer	Creative Publications
1	Introduction to Low Resolutions Gr.	Creative Publications
1	Play Money - Coins	Creative Publications
1	Play Money - Bills	Creative Publications
1	Creative Computer - Magazine	
1	Vompuyinh Teacher - Magazine	
1	Develop Algebra Skills, Volume 1	Midwest Publications
1	Develop Algebra Skills, Volume 2	Midwest Publications
1	Brain Teasers, Book 1	Midwest Publications
1	Brain Teasers, Book 2	Midwest Publications
1	Figural Analogies C-1	Midwest Publications
1	Mind Benders C-1	Midwest Publications
1	Mind Benders C-2	Midwest Publications
1	General Math Word Problems A-1	Midwest Publications
1	General Math Word Problems B-1	Midwest Publications
1	General Math Word Problems C-1	Midwest Publications
1	Cheap Math Lab Equipment	Midwest Publications
	Quizmatic	
	Plastic Letters	
1	Algebra in Easy Steps	Allyn and Bacon, Inc.
1	Teacher's Guide Algebra in East Steps	Allyn and Bacon, Inc.
1	Power Strip K630	Bailey Electronics
2	16K Memory Expansion Modules	William E. Hoff, Rep. Ed. Comp. System
1	Apple II User's Guide	Osborne/McGraw Hill
1	Diagnostic Screen Test: Math	Stoelting

QUANTITY	ARTICLE DESCRIPTION	AVAILABLE FORM
3 pkg.	Test Forms - Math Diagnostic Screen	Stoelting
1	Whole Numbers Diskettes	Jack L. Hartman & Company, Inc.
1	Fractions - Decimals Diskettes	Jack L. Hartman & Company, Inc.
1	Math & Logic Package (4 disks & user guides)	SVE
1	Algebra I (disk & user manual)	SVE
1	New Step-by-Step (2 cassettes & 2 disks)	Program Design
1 box	Marking Pens (8 colors)	
6 boxes	Colored Pencils (12 colors)	
2 dozen	Protractors	
2 dozen	Compasses	
6 pair	Scissors	
2 dozen	Rulers (plastic)	
6 boxes	File Folders (letter)	
20 reams	Paper, 8½" x 11"	
10 pkg.	Index Cards, 5" x 8"	

APPENDIX D:

MATHEMATICS ASSESSMENT INSTRUMENT

DRAFT
WORKING COPY

MATHEMATICS ASSESSMENT

DIVISION OF INSTRUCTIONAL LEARNING SYSTEMS

BUREAU OF LEARNING SYSTEMS

WEST VIRGINIA DEPARTMENT OF EDUCATION

1981

27

1. ROUND 8,536 TO THE NEAREST HUNDRED _____

2. ROUND 7,527 TO THE NEAREST TEN _____

3. WRITE FORTY-FIVE THOUSAND THREE HUNDRED TWO AS A NUMERAL

_____

ADD

7	15	76	4827	36
+ 8	+ 83	+ 58	+ 3916	42
				+ 79

13 + 15 + 6 =

24 + 16 + 10 =

SUBTRACT

17	84	407	706	6,000	98,650
- 5	- 26	- 283	- 259	- 256	- 7,093

MULTIPLY

7	6	23	76	805	734
x 8	x 9	x 8	x 50	x 42	x 237

DIVIDE

$6\overline{)48}$ $4\overline{)50}$ $7\overline{)4914}$ $8\overline{)6248}$

$12\overline{)35888}$ $327\overline{)89452}$

REDUCE: $\frac{4}{12} =$ $\frac{16}{20} =$ $\frac{10}{12} =$

CHANGE TO MIXED NUMBERS: $\frac{7}{3} =$ $\frac{15}{6} =$ $\frac{30}{7} =$

CHANGE TO IMPROPER FRACTIONS: $1\frac{2}{5} =$ $2\frac{1}{4} =$ $7\frac{1}{3} =$

USE $<$, $>$ OR $=$ TO COMPLETE THE FOLLOWING:

$\frac{1}{3}$ $\frac{1}{8}$ $\frac{7}{11}$ $\frac{3}{11}$ $\frac{4}{5}$ $\frac{8}{10}$ $\frac{7}{9}$ $\frac{3}{4}$

ARRANGE THE FOLLOWING IN ORDER OF SIZE (SMALLEST FIRST):

$\frac{1}{7}, \frac{1}{5}, \frac{1}{8}, \frac{1}{4}$ _____

$\frac{2}{9}, \frac{7}{9}, \frac{1}{9}, \frac{5}{9}$ _____

$\frac{2}{3}, \frac{3}{4}, \frac{5}{6}, \frac{4}{9}$ _____

ADD:

$\frac{1}{5}$	$\frac{7}{8}$	$\frac{1}{3}$	$\frac{3}{4}$	$1\frac{2}{7}$	$4\frac{3}{5}$	$8\frac{7}{9}$
$+\frac{2}{3}$	$+\frac{3}{8}$	$+\frac{1}{2}$	$+\frac{5}{6}$	$+3\frac{3}{7}$	$+6\frac{2}{5}$	$+5\frac{4}{9}$

29

SUBTRACT

$$\begin{array}{r} \frac{7}{8} \\ -\ \frac{1}{8} \\ \hline \end{array} \qquad \begin{array}{r} \frac{2}{3} \\ -\ \frac{1}{5} \\ \hline \end{array} \qquad \begin{array}{r} 6\ \frac{7}{9} \\ -\ 2\ \frac{5}{9} \\ \hline \end{array} \qquad \begin{array}{r} 4\ \frac{3}{4} \\ -\ 2 \\ \hline \end{array} \qquad \begin{array}{r} 7 \\ -\ 3\ \frac{1}{3} \\ \hline \end{array}$$

$$\begin{array}{r} 11\ \frac{3}{4} \\ -\ 2\ \frac{1}{2} \\ \hline \end{array} \qquad \begin{array}{r} 16\ \frac{1}{3} \\ -\ 5\ \frac{2}{3} \\ \hline \end{array} \qquad \begin{array}{r} 8\ \frac{1}{4} \\ -\ 3\ \frac{1}{2} \\ \hline \end{array}$$

MULTIPLY

$\frac{3}{4} \times \frac{1}{5} =$ $\qquad$ $\frac{7}{8} \times \frac{16}{21} =$ $\qquad$ $\frac{8}{9} \times \frac{5}{11} \times \frac{27}{40} =$

$\frac{3}{5} \times 2 =$ $\qquad$ $\frac{4}{5} \times 2\frac{1}{2} =$ $\qquad$ $1\frac{1}{2} \times 4\frac{2}{3} =$

DIVIDE:

$\frac{1}{2} \div \frac{1}{3} =$ $\qquad$ $\frac{3}{5} \div \frac{6}{25} =$ $\qquad$ $\frac{2}{3} \div 2 =$ $\qquad$ $7 \div \frac{3}{5} =$

$\frac{2}{7} \div 3\frac{1}{3} =$ $\qquad$ $1\frac{1}{5} \div 3 =$ $\qquad$ $4\frac{1}{2} \div 1\frac{1}{2} =$

ROUND 183.463 TO THE NEAREST TENTH _____

WRITE SEVENTEEN THOUSANDTHS AS A DECIMAL _____

ARRANGE THE FOLLOWING IN ORDER OF SIZE (SMALLEST FIRST):

.04 , .4 , .004 , 4.0 _____

.071 , .63 , 1.5 , .283 _____

ADD:

$$\begin{array}{r} 17.9 \\ +\ 3.4 \\ \hline \end{array}$$

18 + .2 =

3.4 + .2 + .51 =

SUBTRACT:

$$\begin{array}{r} 9.8 \\ -\ 3.7 \\ \hline \end{array}$$

$$\begin{array}{r} 4.25 \\ -\ 2.61 \\ \hline \end{array}$$

7.3 - 2 =

3 - 2.1 =

8.6 - .15 =

MULTIPLY:

$$\begin{array}{r} 4.1 \\ \times\ 2 \\ \hline \end{array}$$

$$\begin{array}{r} 3.2 \\ \times\ .3 \\ \hline \end{array}$$

$$\begin{array}{r} .14 \\ \times\ .03 \\ \hline \end{array}$$

4.2 x .001 =

6.3 x 100 =

DIVIDE:

$2\overline{)8.4}$ $.02\overline{)6.52}$ $.02\overline{)4.2}$

$2\overline{).132}$ $.2\overline{)42}$

COMPLETE THE FOLLOWING:

50 % OF 84 IS _____

300 % OF 6 IS _____

8 IS 6 % OF _____

100 % OF 87 IS _____

30 IS _____ % OF 120

31 % OF 53 IS _____

COMPLETE THE FOLLOWING STATEMENTS:

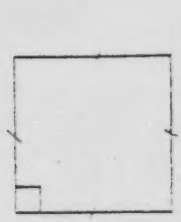
3 METRES IS THE SAME AS _____ CENTIMETRES.

1 KILOGRAM IS THE SAME AS _____ GRAMS.

1 QUART CONTAINS _____ PINTS.

1 POUND CONTAINS _____ OUNCES.

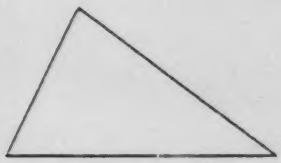
NAME THE FOLLOWING:



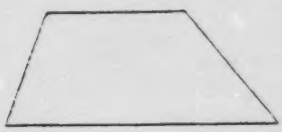
_____

_____

_____



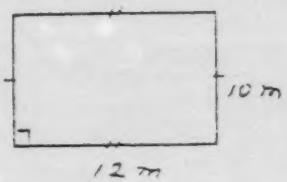
_____



_____

_____

GIVE THE PERIMETER AND AREA FOR EACH OF THE FOLLOWING:

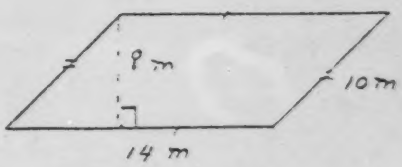


PERIMETER _____

AREA _____

PERIMETER _____

AREA _____



PERIMETER _____

AREA _____

APPENDIX E:

STUDENT DIAGNOSTIC RECORD

NAME _____

SCORE _____

DATE _____

CLASS _____

	W	F	MN	D
+				
−				
x				
÷				
Relations				

MEASUREMENT ℓ

AREA OR PERIMETER Iden. Fig.

APPENDIX F:

STUDENT PRESCRIPTION FORM

NAME: _____

	COMPETENCY	ACTIVITY	COMPLETE	INCOMPLETE	INTRODUCED	ONGOING	MASTERED	
MONDAY								
TUESDAY								
WEDNESDAY								
THURSDAY								
FRIDAY								

APPENDIX G:

LOGS - MACHINE TIME AND TEACHER TIME

LOG

MACHINE # _____

NAME	TIME	
	START	FINISH

TEACHER WEEKLEY LOG

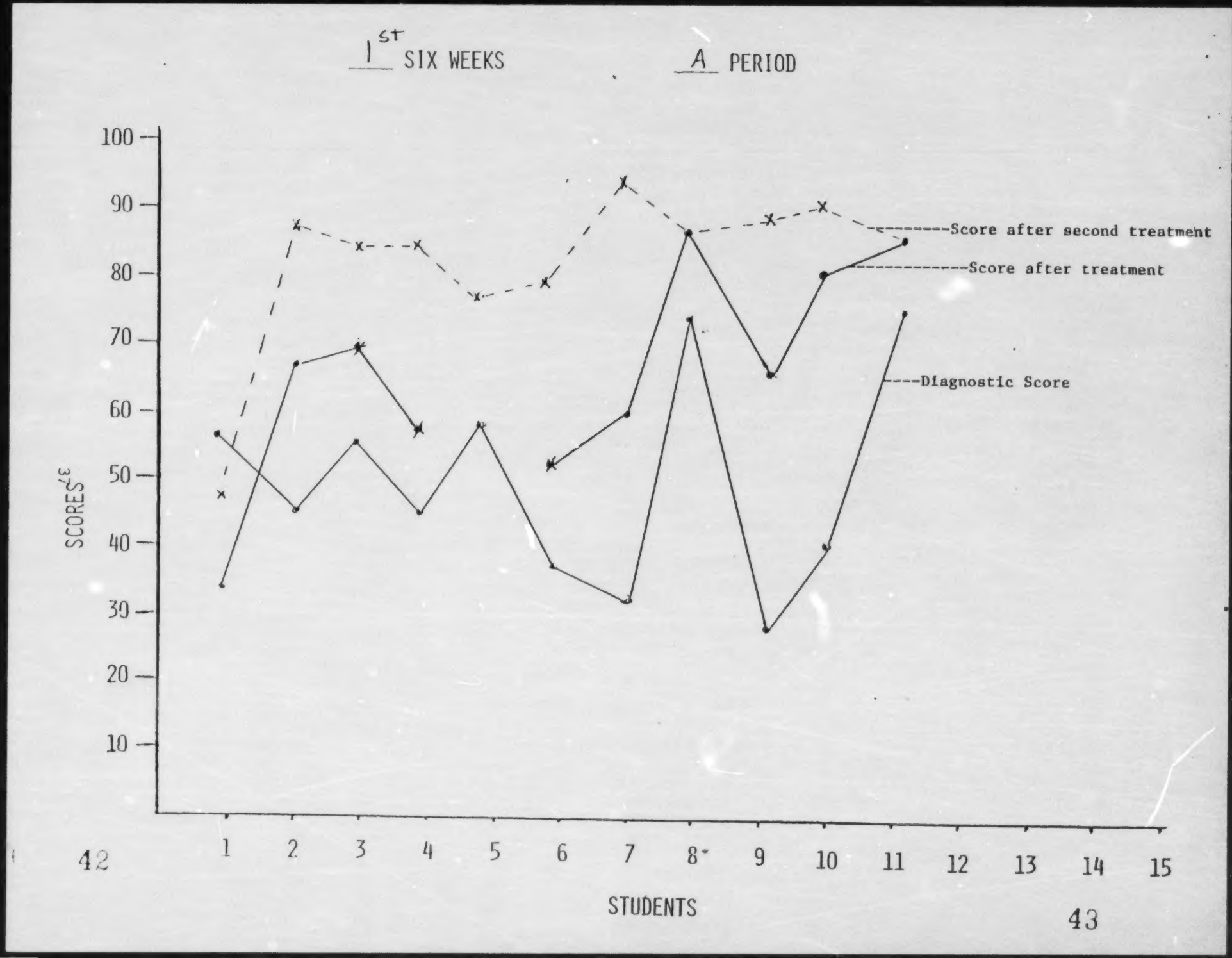
RALEIGH LAB

Week of _____

PERIOD	TUTORING		NON-TUTORIAL
	INDIVIDUAL	GROUP	

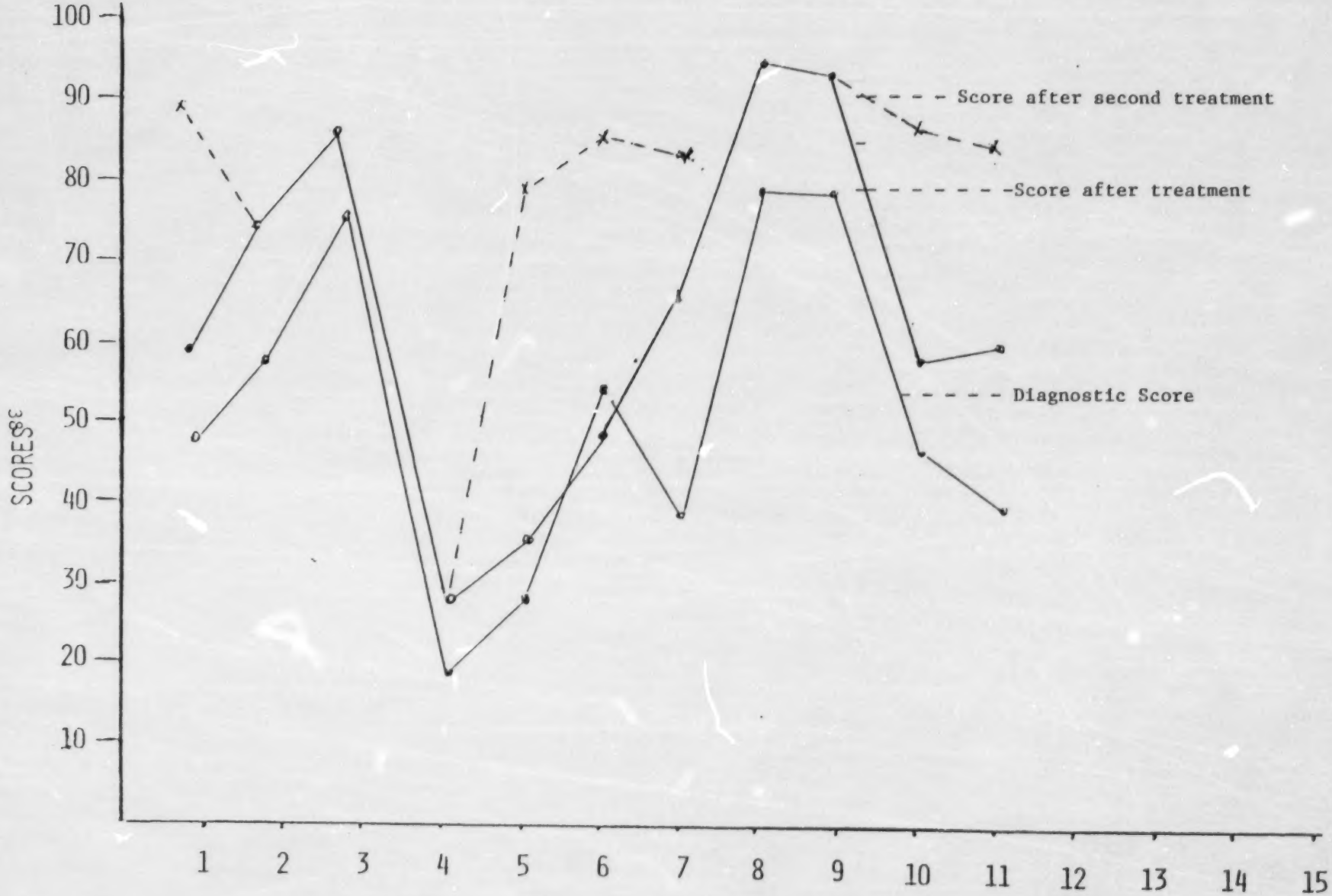
APPENDIX H:

GRAPHIC REPRESENTATION OF STUDENT SCORES

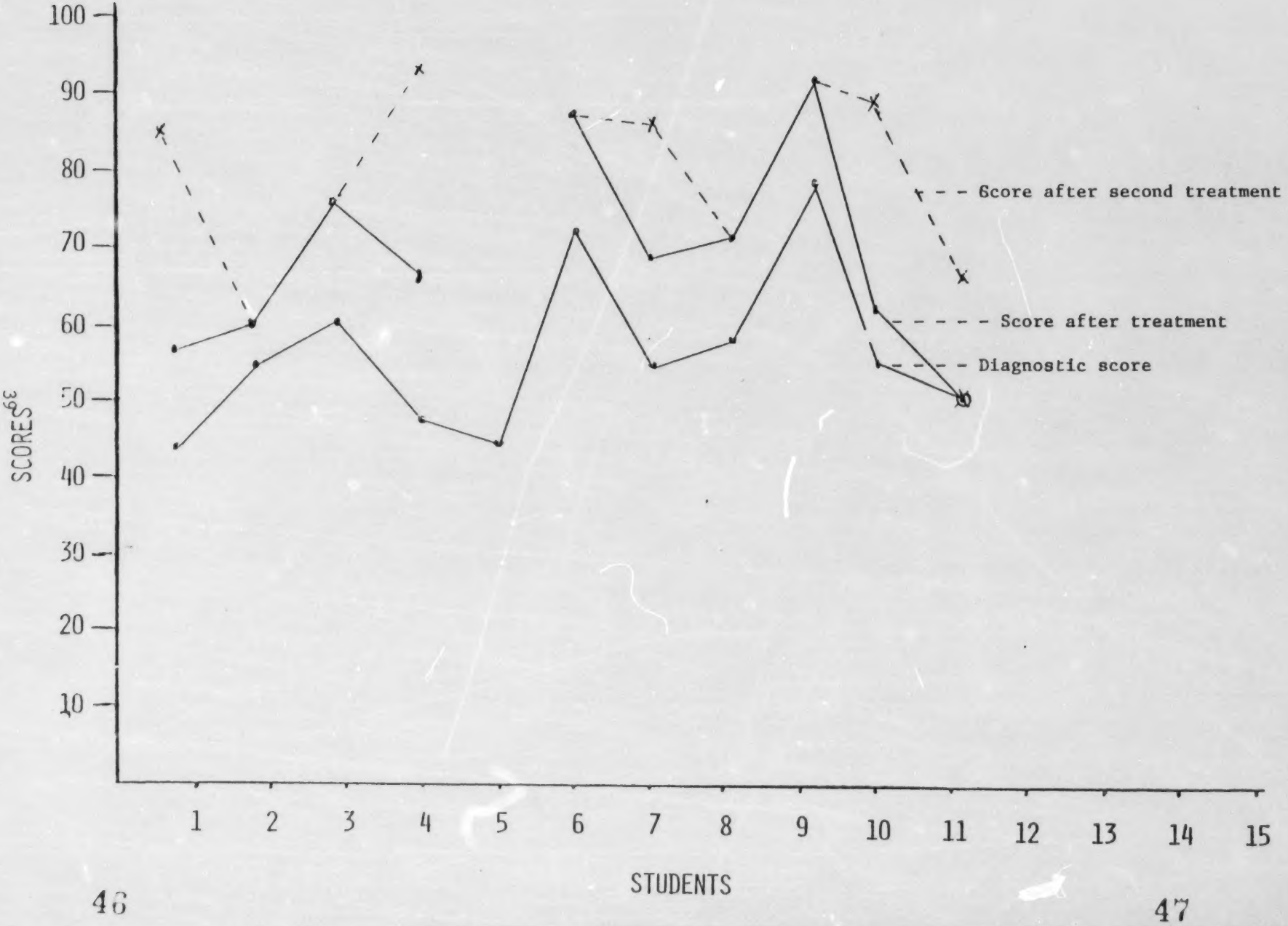

1st SIX WEEKS
A PERIOD
100
90
80
70
60
50
40
30
20
10
SCORES
Score after second treatment
Score after treatment
Diagnostic Score
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
STUDENTS

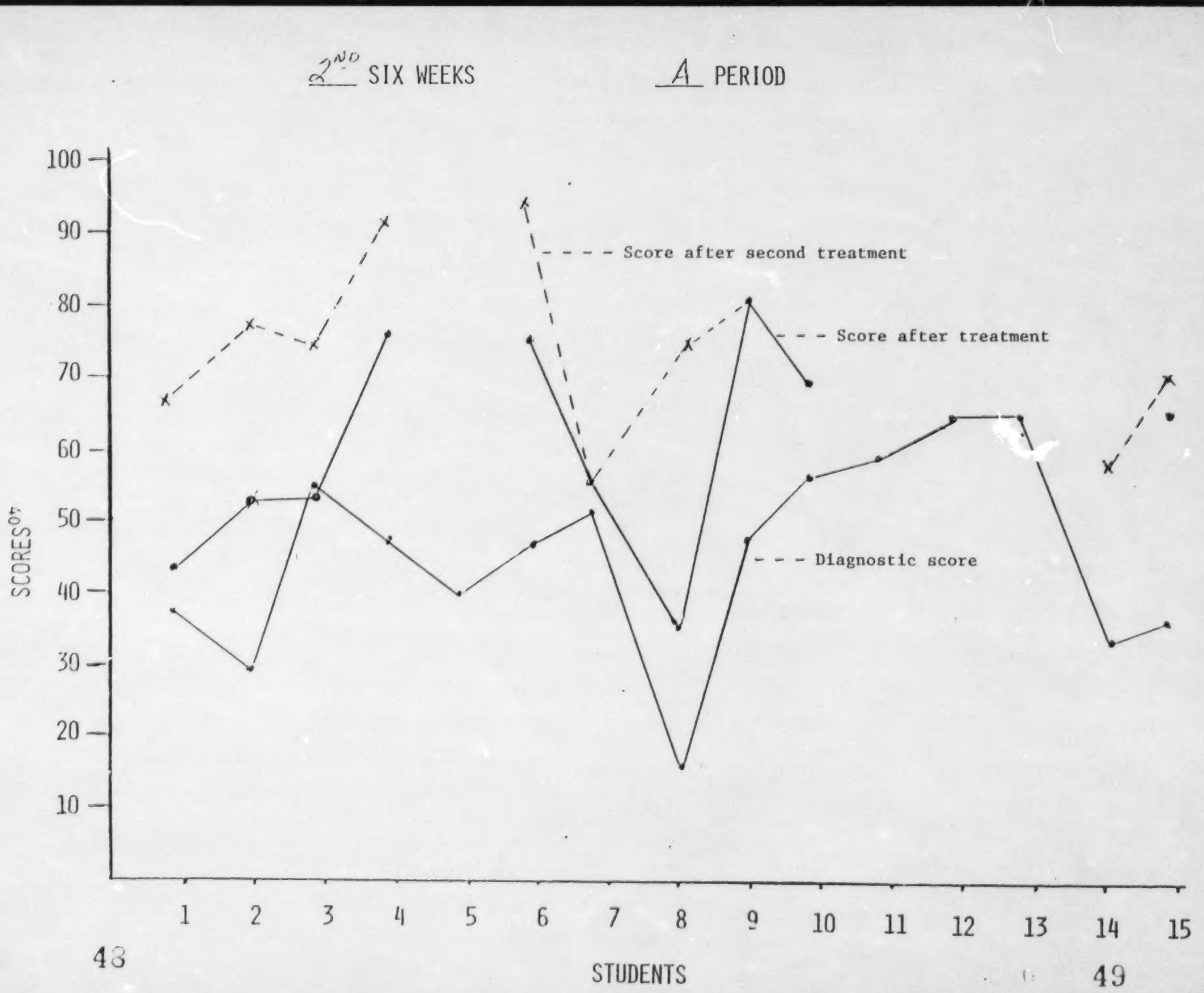
1ST SIX WEEKS

B PERIOD

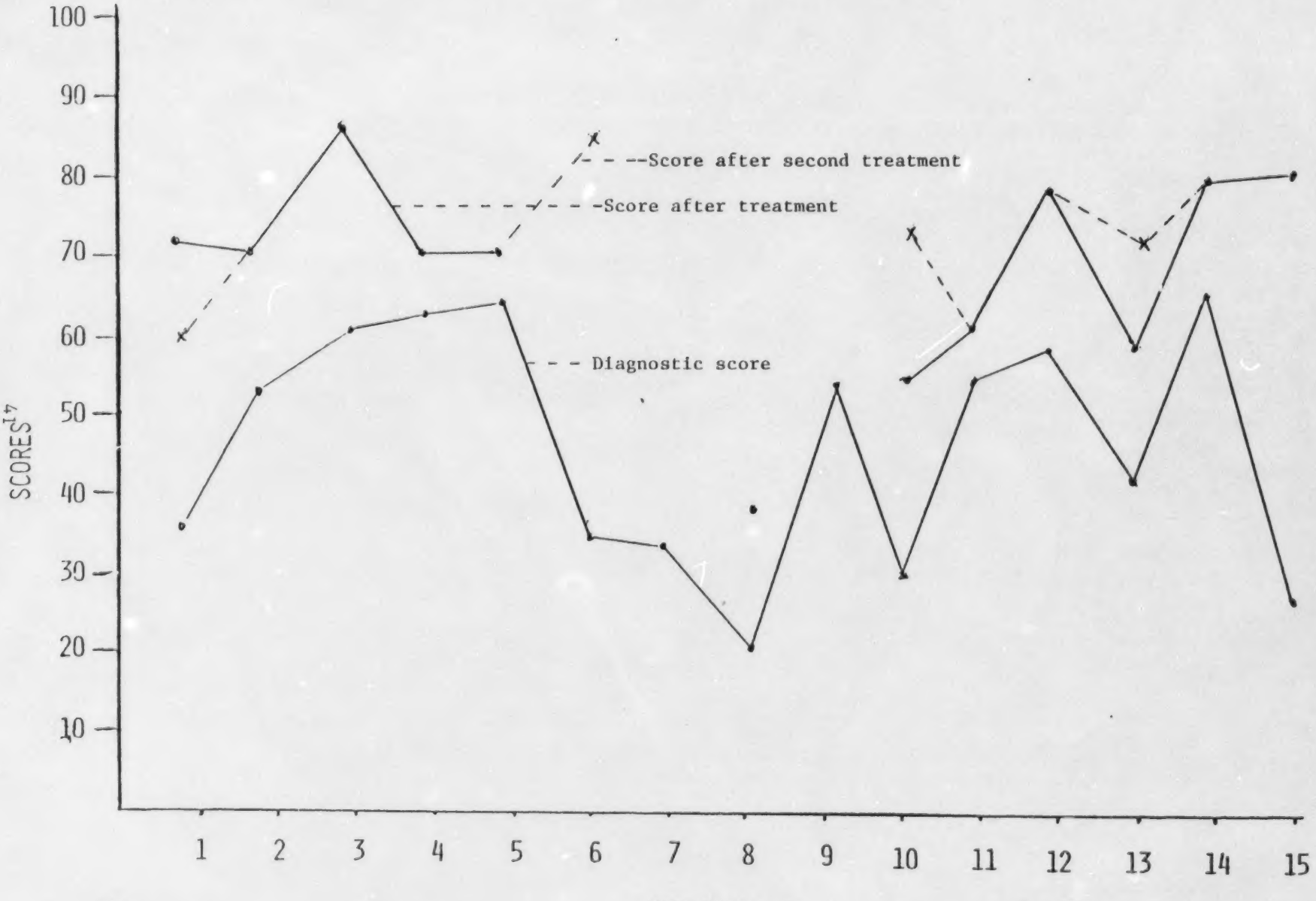


1ST SIX WEEKS C PERIOD

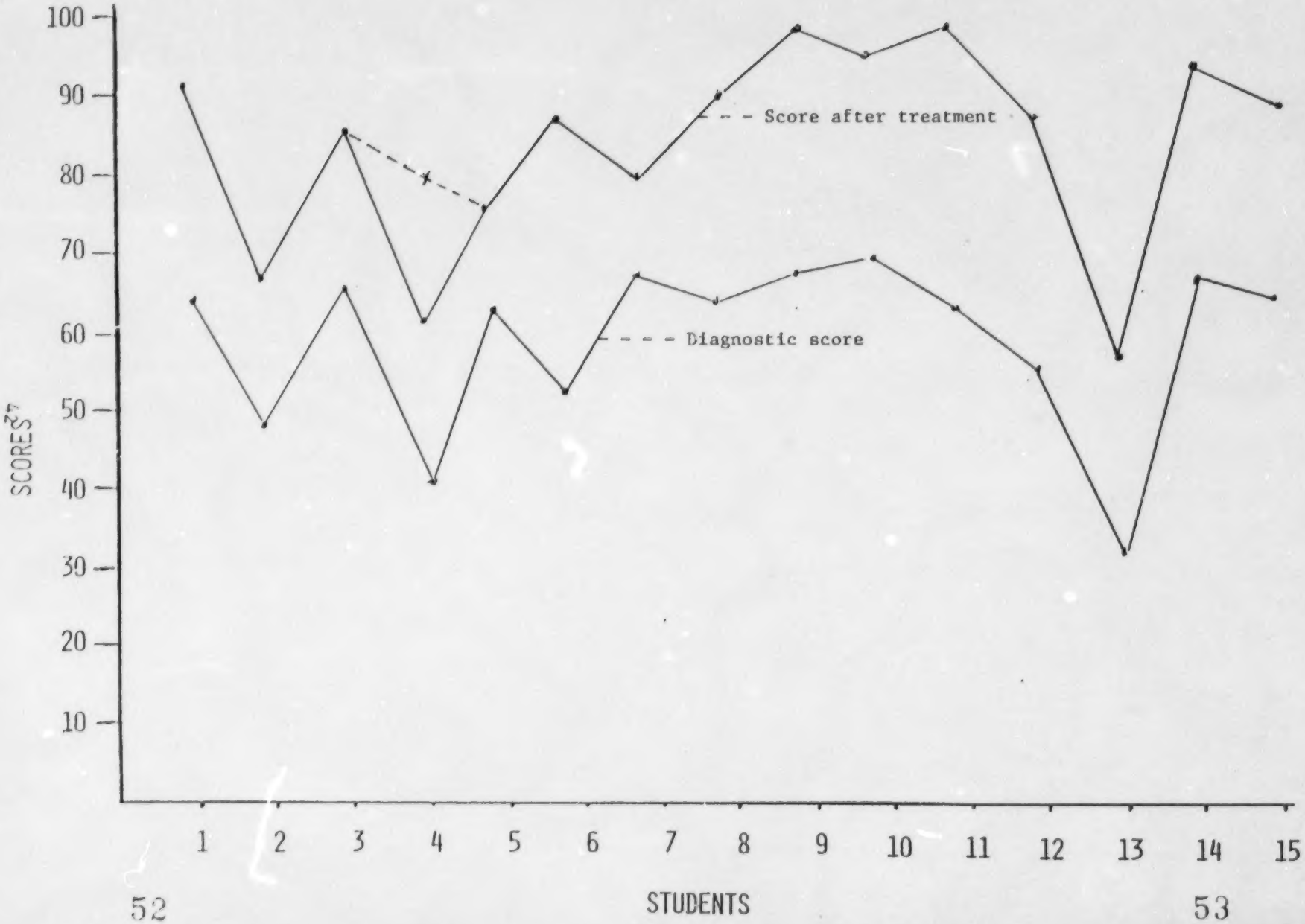



2ND SIX WEEKS
A PERIOD
100
90
80
70
60
50
40
30
20
10
SCORES
Score after second treatment
Score after treatment
Diagnostic score
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
STUDENTS

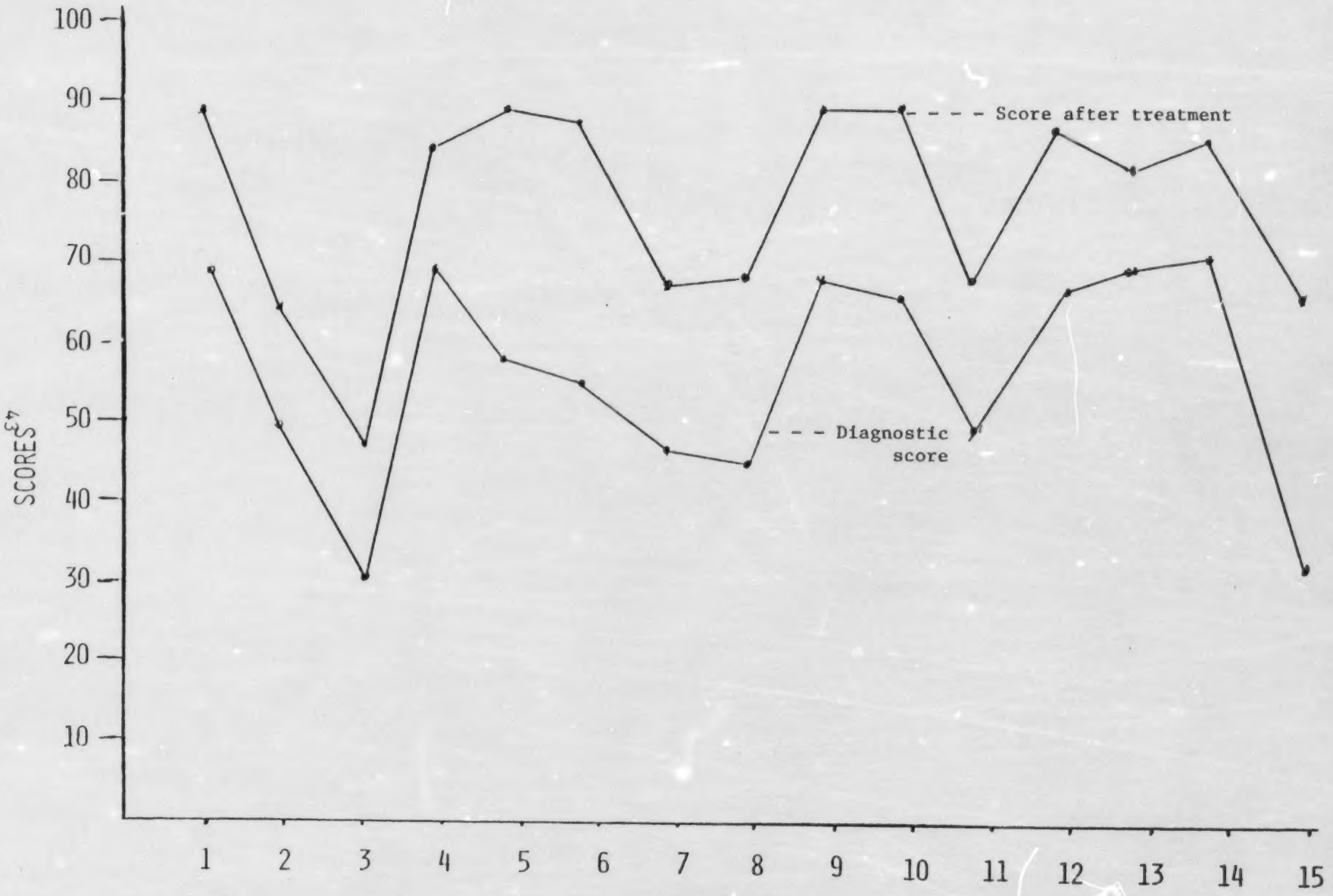
2nd SIX WEEKS B PERIOD



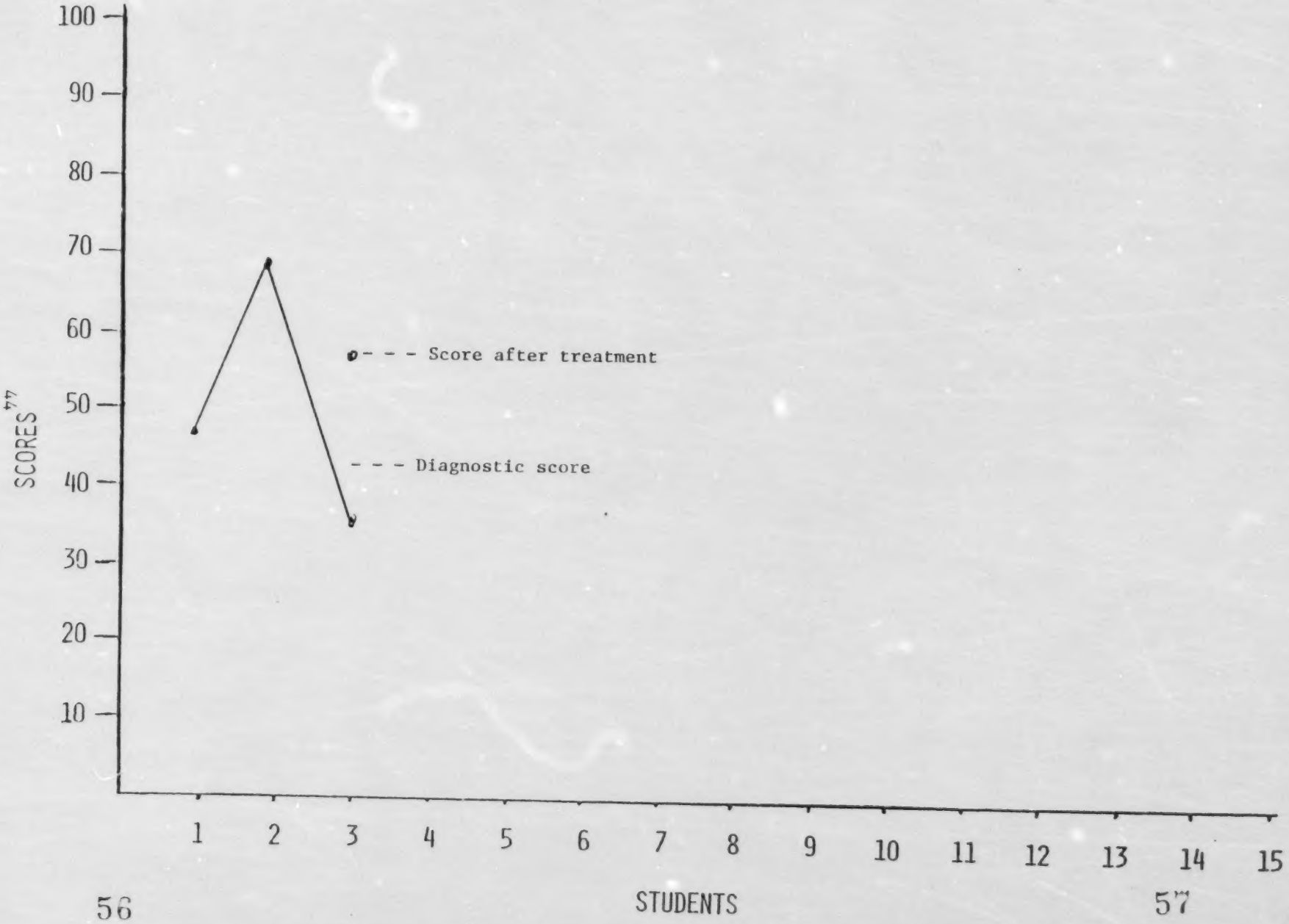
3rd SIX WEEKS A PERIOD

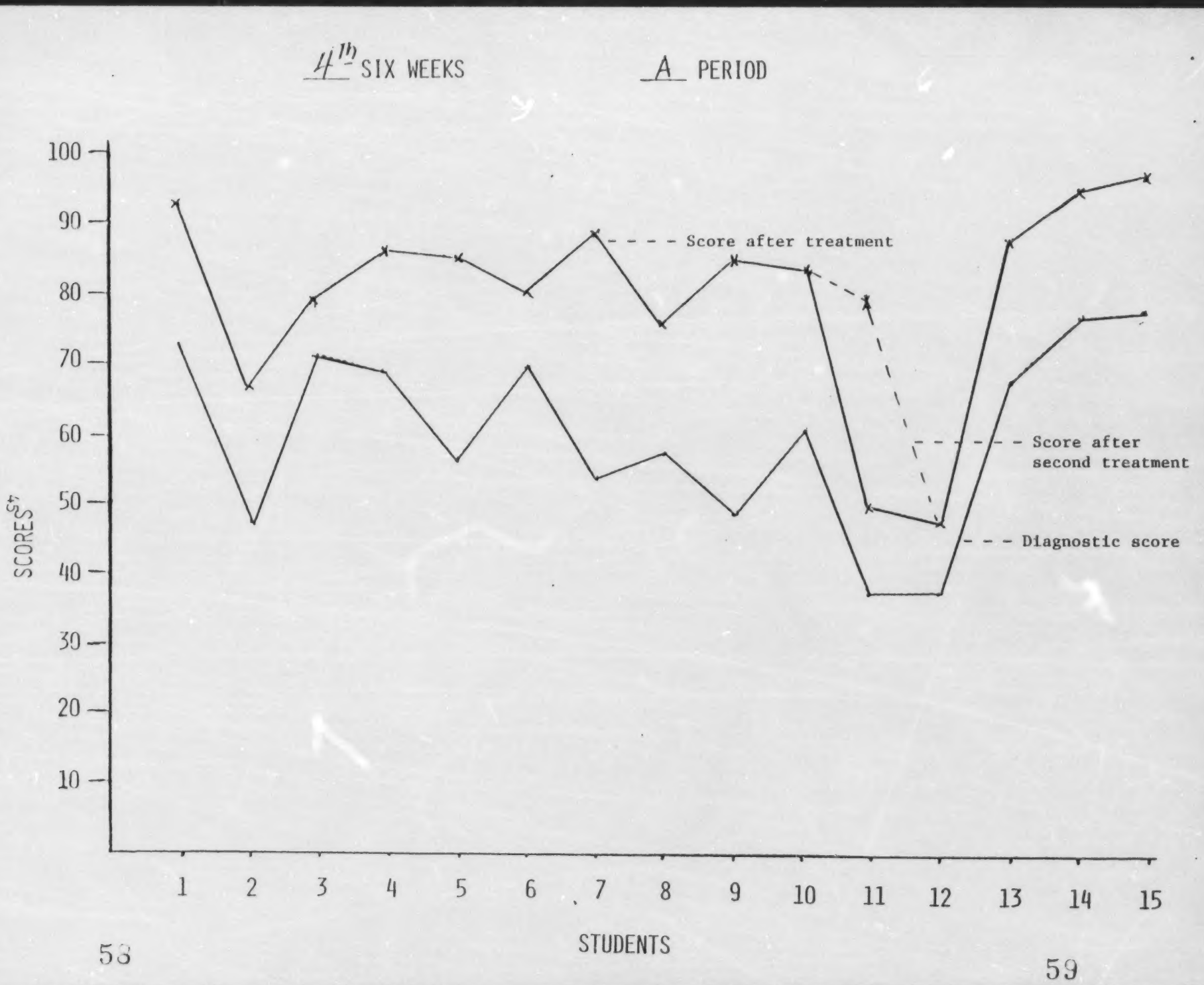


3RD SIX WEEKS B PERIOD

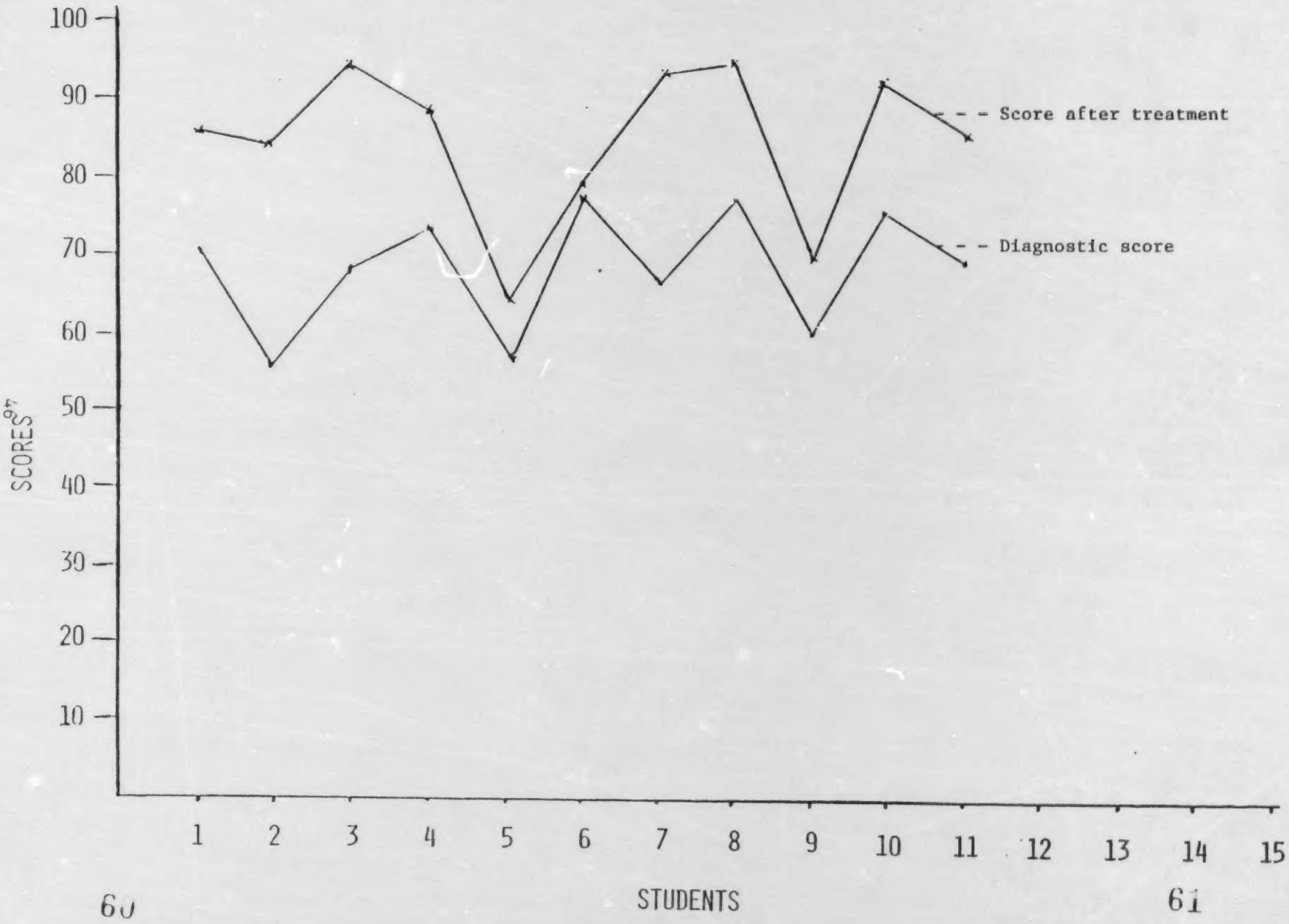


3RD SIX WEEKS C PERIOD

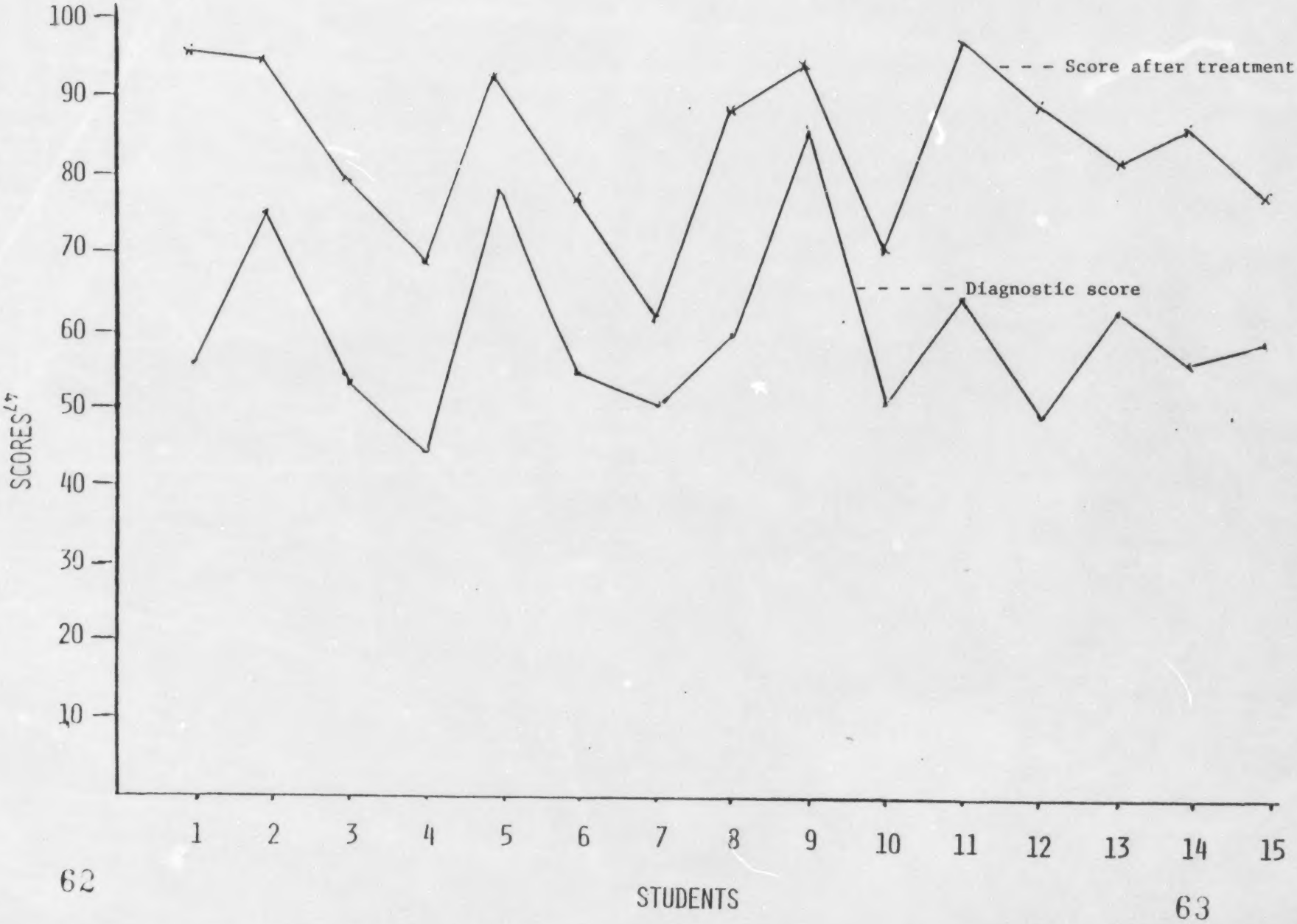


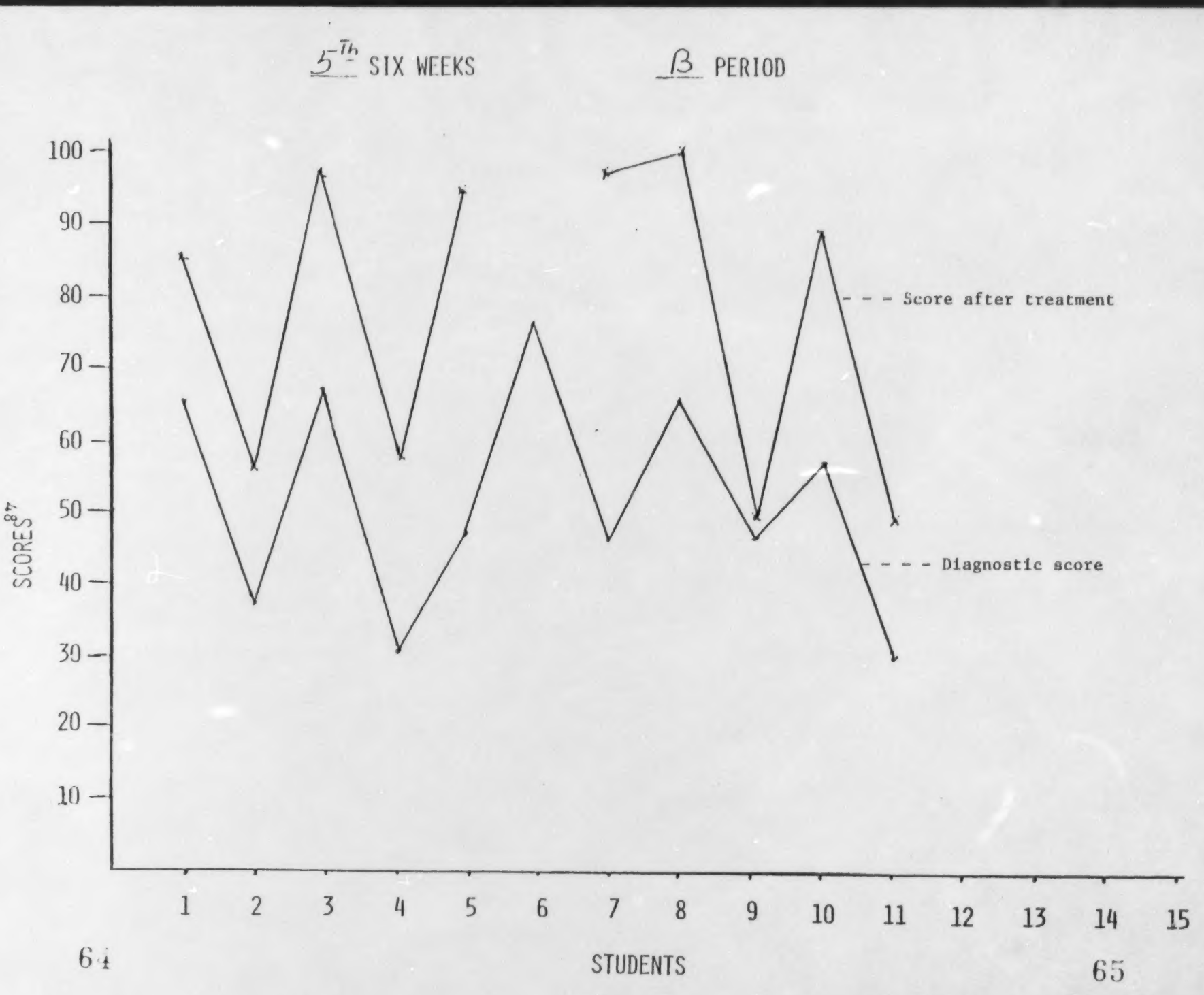

4th SIX WEEKS
A PERIOD
100
90
80
70
60
50
40
30
20
10
SCORES
Score after treatment
Score after second treatment
Diagnostic score
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
STUDENTS

4th SIX WEEKS B PERIOD

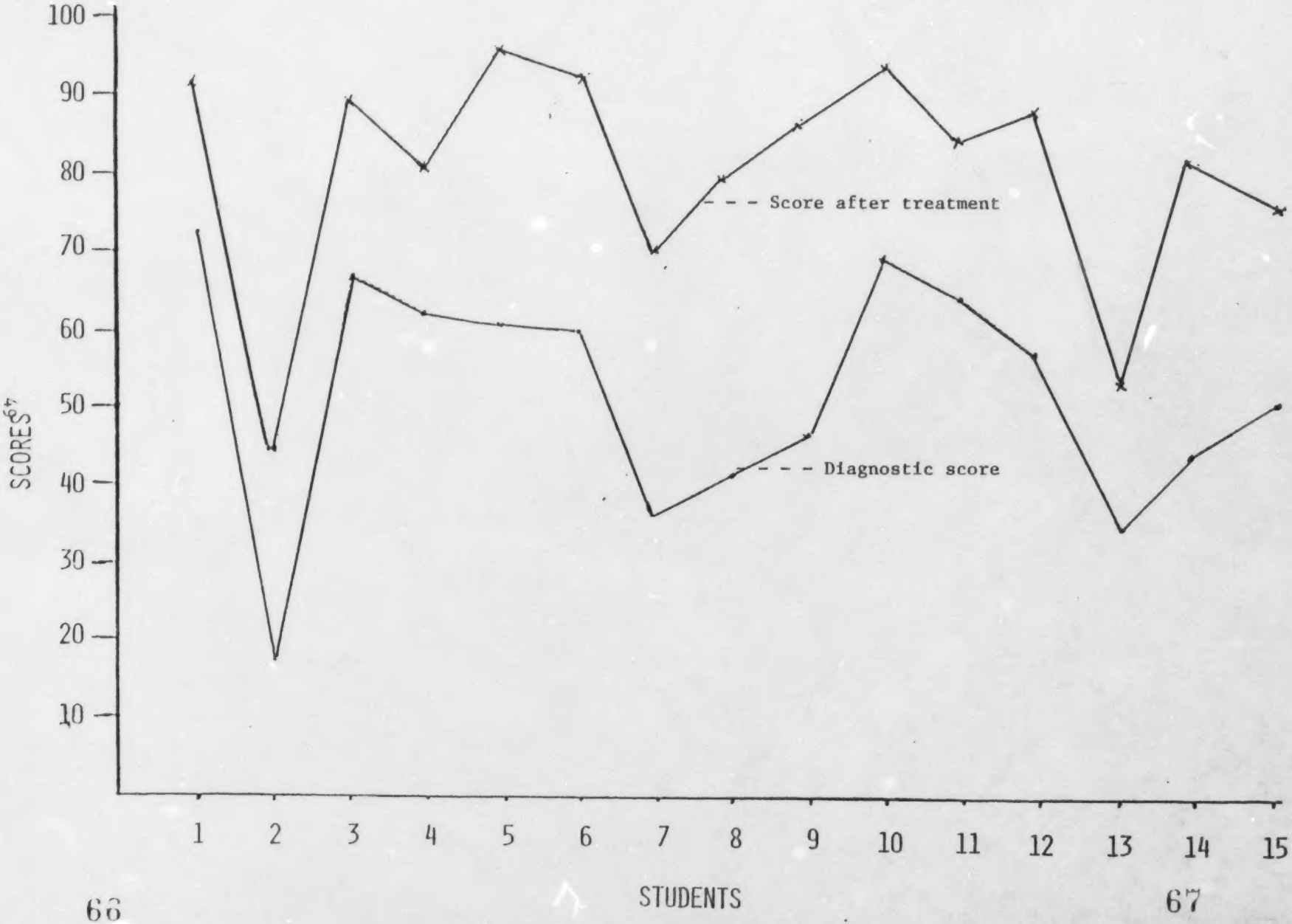


5th SIX WEEKS A PERIOD

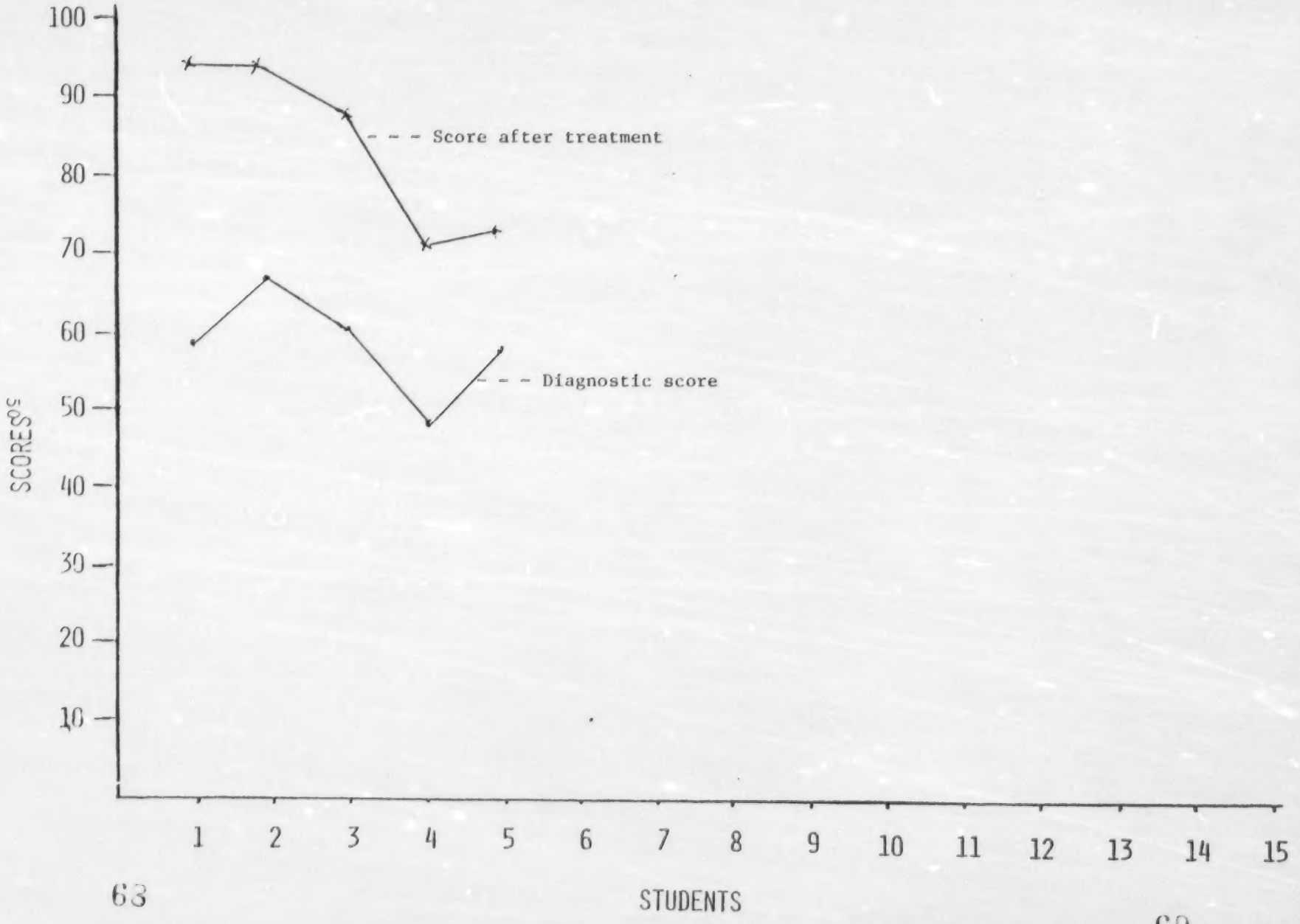



5th SIX WEEKS
B PERIOD
100
90
80
70
60
50
40
30
20
10
SCORES
- - - Score after treatment
- - - - Diagnostic score
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
STUDENTS

6th SIX WEEKS A PERIOD



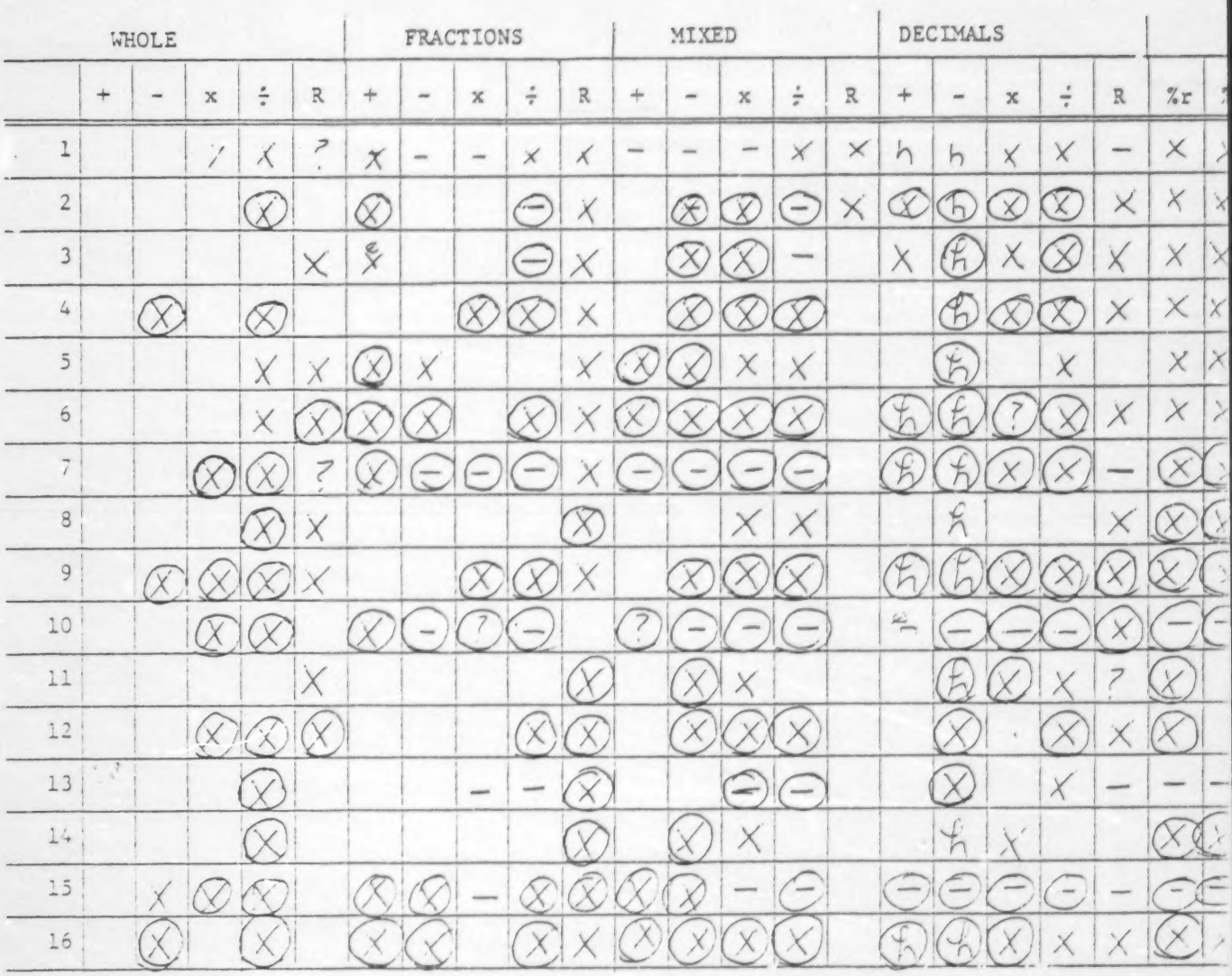
6th SIX WEEKS B PERIOD



APPENDIX I:

STUDENT TREATMENT AND MASTERY CHARTS

1 ST SIX WEEKS A PERIOD



X Areas diagnosed for treatment

(X) Mastered after treatment

(Note: The indicators are for the total treatment, not for this six-weeks alone. Some of the students were in the lab two or three six-week periods.)

1ST SIX WEEKS 13 PERIOD

	WHOLE					FRACTIONS					MIXED					DECIMALS						
	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	%r	%
1		⊗		⊗				⊗	—	X		⊗	⊗	—		⊗	⊗		⊗	X	⊗	X
2				⊗		—		—	—	?	-	⊗	—	—		-	⊗	—	—	—	—	—
3					X					⊗								?		X	⊗	⊗
4					X									X			⊗	X	X		—	
5		X		⊗				⊗	⊗	⊗		⊗	⊗	⊗		⊗	⊗	⊗	⊗	X	⊗	
6		⊗		⊗	X	⊗	⊗		⊗	X		⊗	⊗	⊗	X	⊗	⊗	⊗	⊗	X	X	
7		—		⊗	⊗	⊗	—	—	—	⊗	?	—	—	—		⊗	⊗	⊗	⊗	⊗	⊗	
8				X		⊗		X	—	⊗		⊗	—	—			⊗	X	⊗	X	X	
9				—				?	⊗	X	X	X	⊗	⊗			⊗			X	⊗	
10				X	⊗				⊗	⊗		⊗	⊗	⊗		⊗	⊗	—	—	—	—	
11		X		?	X				X	X		X	X	X		⊗	⊗	X	X	X	X	
12				⊗		X					X	⊗		⊗		·	⊗	—	X	?	⊗	
13	·	⊗		⊗	X	⊗			—	⊗		⊗	⊗	—		⊗	⊗		⊗	X	—	
14				⊗		X	X		X	⊗		⊗	X	X				⊗		⊗	—	
15				⊗						X									⊗		⊗	
16			⊗	⊗	X	⊗		⊗	—	X	⊗	⊗	⊗	—			⊗		⊗	X	—	

X Areas diagnosed for treatment

⊗ Mastered after treatment

1ST SIX WEEKS C PERIOD

	WHOLE					FRACTIONS					MIXED					DECIMALS						
	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	%r	%t
1		⊗		⊖				⊗	⊖	⊗			X	—			⊗	⊗	⊗	X	⊖	
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						
16																						

X Areas diagnosed for treatment

⊗ Mastered after treatment

2ND SIX WEEKS A PERIOD

	WHOLE					FRACTIONS					MIXED					DECIMALS						
	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	%r	%
* 1																						
* 2																						
* 3																						
* 4																						
5																						
* 6																						
7																						
* 8																						
9																						
10																						
11																						
12																						
13																						
14																						
* 15																						
* 16																						

X Areas diagnosed for treatment

(X) Mastered after treatment

74

2nd SIX WEEKS B PERIOD

	WHOLE					FRACTIONS					MIXED					DECIMALS						
	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	%r	%
1				⊗	X				—	X		⊗		—		f	f	—	—	—	—	
2				X	X				—	X			X	—		f	f	⊗	X		⊗	
3				⊗	X					⊗		⊗		X		f	f	?	⊗	X	⊗	
4				⊗						X	X	⊗					⊗	⊗	⊗	X	—	
★ 5				⊗	X	⊗	—	—	—	-	—	—	—	—		f	f	⊗	—	—	—	
6		X	X	X	X	X		—	—	X		X	—	—		—	—	—	—	—	—	
7				⊗	X	X	⊗	X	⊗	⊗	X	⊗	⊗	⊗		⊗	—	⊗	—	—	—	
8		X		X					—	X		X	X	—			f		X	X	—	
9		⊗		⊗	X	⊗	⊗	⊗	⊗	⊗	⊗	⊗	X	⊗	X	X	X	X	⊗	X	⊗	
10				⊗						⊗		⊗	⊗	⊗		f	f	⊗	⊗	X	⊗	
11				?	⊗	X	—			⊗	X	—	—				⊗		X	X	⊗	
12			⊗	⊗	⊗	⊗				⊗	X	⊗	⊗			f	f	X	X	—	⊗	
13				⊗						⊗		⊗	⊗	X			f	X	—	X	—	
14		X	X	X		—	—	—	—	⊗	—	—	—	—			f	—	—	X	—	
15																						
16																						

X Areas diagnosed for treatment

⊗ Mastered after treatment

3RD SIX WEEKS C PERIOD

	WHOLE					FRACTIONS					MIXED					DECIMALS						
	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	%r	%
1				X	X	X	X	X	—	X	X	X	X	—		X	—	—	—	X	X	
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						
16																						

X Areas diagnosed for treatment

(X) Mastered after treatment

3RD SIX WEEKS A PERIOD

	WHOLE					FRACTIONS					MIXED					DECIMALS						
	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	%r	%
1				X	X					X				X			X	X	X	X	—	
2		X		X	X			X	—	X		X	—	—		X	X	X	X	X	—	
3		X		X	X					X	X	X				X	X	X	X	X	—	
4				⊗	⊗	⊗	⊗	⊗	⊗	X	⊗	X	⊗	⊗		⊗	⊗	⊗	X	X	X	
5		X		—				X	X	X	X	X	X	X			X	X	—	X	X	
6			—	—		X	X	X	—	—	X	—	—	—				X	—	X	—	
7	X	X		X	X					X	X	X		X				X	X	X	X	
8				X				X	—	X			—	—			X	—	—	X	—	
9				X			X	X	X	X		X	X	X		X	X	X	X	X	X	
10			X	X		X		X	X	X	X		X	X		X	X	X	X	X	X	
11				X				?		X		X	?	X		ξ	ξ		X	X	X	
12				X		X	X	X	X	X	?	X	X	X		X	X	X	X	X	—	
13	X	X	?	X	X	X	X	X	X	?	X	X	X	X			X		X	X	X	
14		X	X	X		X		X		X		X	X			X		X	X		X	
15			X	X						X	X	X	X	X		X	X	X	X		X	
16				X			X	X	X	X		X	X	X				X	X	X	X	

X Areas diagnosed for treatment

⊗ Mastered after treatment

77

3RD SIX WEEKS 6 PERIOD

	WHOLE					FRACTIONS					MIXED					DECIMALS						
	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	%r	%
1		X		X		X	X	X	X	?	X	X	—	X			X	X	X	X	X	
2		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	
3		X		X						X		X	X	X		X	X		X		X	
4				X		X	—		—	?	X	—	—	—						X	?	
5				—		X	X	—	—	X		X	—	—		X	—	—	—		—	
6		X		X	X				X	X		X					X	X	X	X	
7		X		X				X	—	X		X	X	—			X	—	—	—	
8				X			X	X	X	X			X	X		X	X	X	X		X	
9				X			X		X	X		X		X		X	X	X	X	X	X	
10		X		X	X	X	X	X	—	X		X		—			X	X	—	X	—	
11				X	X			X	X	X		X	X	X			X		X	X	X	
12				X								X	X	X		X	X		X		X	
13		X		X								X	X	X		X	X	X	X			
14		X		X	X	X	X		X	X	X	X	X	—		X	X	X	X	—	X	
15		X		X	X			X	—	X	X	X	X	—			X	X	X	X	X	
16				X			X		X	X		X		X				X	X	X	X	

X Areas diagnosed for treatment

(X) Mastered after treatment

78

4th SIX WEEKS A PERIOD

	WHOLE					FRACTIONS					MIXED					DECIMALS						
	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	%r	%
1				X	X			X	⊗	X		⊗	X	X		X	X	X	X	X	X	X
2			?	X				X	X			⊗	⊗	X						X	X	X
3			?	X	X					X	X	X		X			⊗	X	⊗	⊗	X	X
4				X		X			X	⊗	X	X	⊗	X			h		X	X	X	X
5				⊗		X	X	X	X	X	X	⊗	X	X					?	X	X	X
6					\	X	X	X	⊗	X	X	X	X	⊗			X		⊗	X	⊗	X
7				X				⊗	X	X	⊗	⊗	X	⊗			h	⊗	⊗	X	X	X
8		⊗		⊗				⊗	⊗	X		⊗	⊗	⊗		X	⊗		⊗	⊗	⊗	X
9		⊗		⊗	X	⊗	⊗		⊗	X		⊗	⊗	⊗	X	h	h	⊗	⊗	X	X	X
10		⊗		X		⊗	⊗		⊗	X	⊗	⊗	⊗	⊗		⊗	⊗	⊗	X	X	X	
11				X	X		X	X		X	X	X	X			h		X	X	X	X	X
12				X	X				⊗	X		⊗	⊗	X		X	⊗	X	⊗	X	X	X
13				X					X					X				X			X	X
14				X						⊗							⊗	X	⊗	X	X	X
15		X		⊗	X				X	X		X					X	X	X	X	X	X
16				X		X	X		⊗	⊗	X	⊗	⊗	⊗			X		X	X	X	X

X Areas diagnosed for treatment

⊗ Mastered after treatment

4th SIX WEEKS B PERIOD

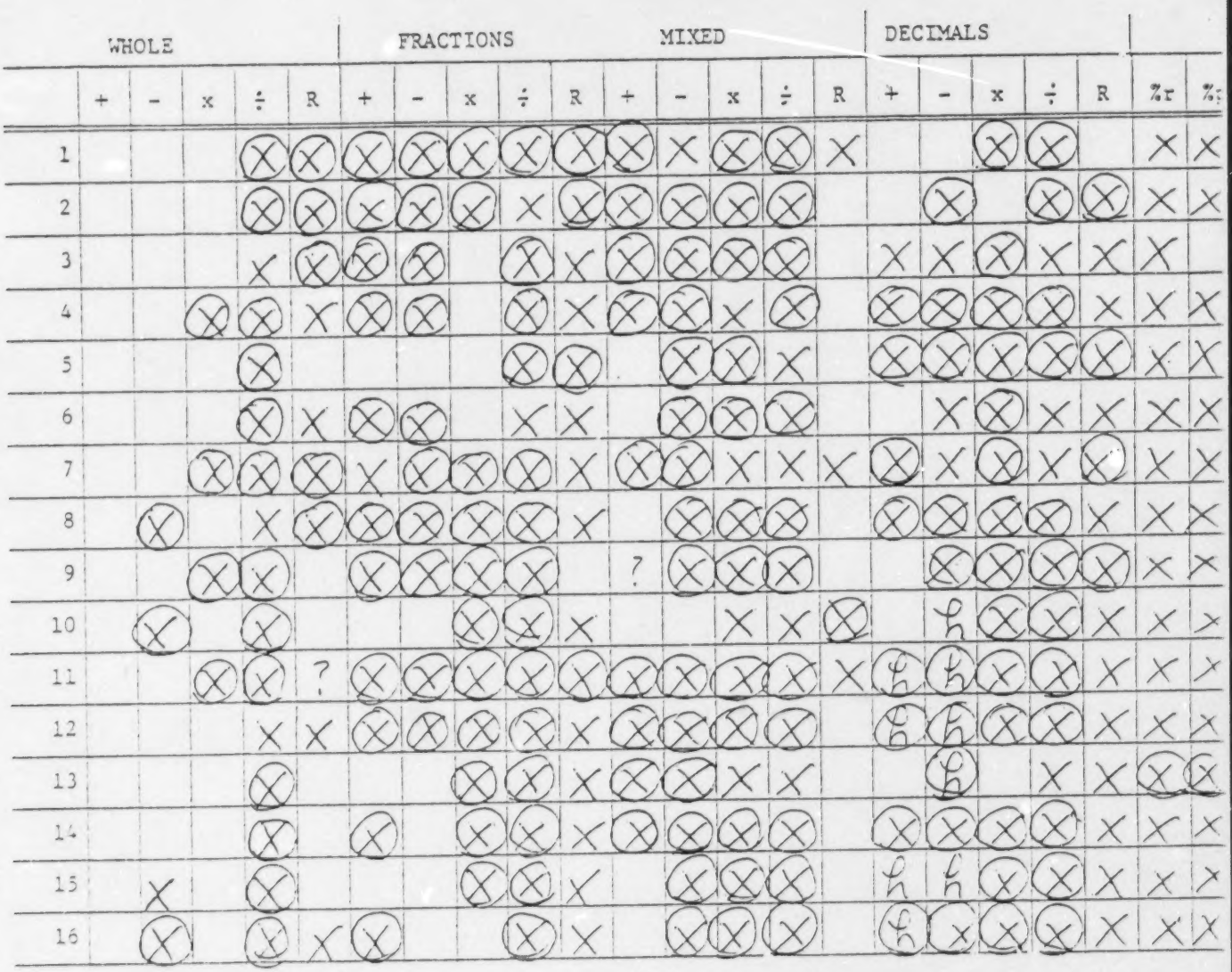
	WHOLE					FRACTIONS					MIXED					DECIMALS						
	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	%r	%p
1						X	X		X	X		⊗	X	X	?		X				X	X
2							X			X						?	X	X	⊗	X	X	X
3				X	X		X	X		X	X	⊗	X	X		⊗	X	X	X	X	X	X
4				X						X		X				h	h			X	X	X
5				X	X				X	X		X		X			X			⊗	X	X
6			X	X			X	X	X		X	X	X	X					X	X	X	X
7				X	?		X	X	⊗	X	X	X	X	X		X	X	X		X	X	X
8				X					⊗			X	X	X			X	⊗		X	X	X
9			X	X	X		X	X	X	X		⊗	⊗	X		X	X	X		X	X	X
10																						
11																						
12																						
13																						
14																						
15																						
16																						

X Areas diagnosed for treatment

⊗ Mastered after treatment

80

5th SIX WEEKS A PERIOD



X Areas diagnosed for treatment

(X) Mastered after treatment

81

5th SIX WEEKS B PERIOD

	WHOLE					FRACTIONS					MIXED					DECIMALS						
	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	%r	%
1		⊗		⊗	X	⊗	⊗	⊗	X	X		X	X	X		⊗	⊗	X	X	X	X	X
2		⊗	⊗	⊗	⊗				⊗	X		⊗	⊗	⊗				⊗		⊗	⊗	⊗
3		⊗	⊗	X	⊗	X	X	X	X	⊗	X	X	X	X		⊗	X	X	X	X	X	X
4		⊗				⊗	⊗	⊗	⊗	X	⊗	⊗	⊗	⊗			⊗	⊗	⊗	X	X	X
5				X	X	⊗	X			X	⊗	⊗	X	X			⊗		X		X	X
6				⊗		⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗		⊗	⊗	⊗	⊗	X	X	X
7				⊗	⊗			⊗	⊗	⊗		⊗		⊗	⊗		⊗		⊗	⊗	⊗	⊗
8				X		X	X	X	X	X	X	X	X	X			X	X	X	X	X	X
9		⊗	X	⊗	X	X	X	X	X	X	⊗	X	X	X		X	⊗	X	X		X	X
10																						
11																						
12																						
13																						
14																						
15																						
16																						

X Areas diagnosed for treatment

⊗ Mastered after treatment

6th SIX WEEKS A PERIOD

	WHOLE					FRACTIONS				MIXED						DECIMALS						
	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	%r	%
1				⊗	X			⊗	⊗	X		⊗	⊗	⊗		⊗	⊗	⊗	⊗	⊗	X	X
2		⊗	⊗	X	X	X	X	X	X	X	⊗	X	⊗	X	X	⊗	⊗	X	X	X	X	X
3				⊗		⊗			⊗	X		⊗	⊗	⊗	X	⊗	⊗	⊗	⊗	⊗	X	X
4				⊗	⊗	⊗	⊗	⊗	⊗	X	⊗	X	⊗	⊗		⊗	⊗	⊗	X	X	X	X
5					⊗	⊗		⊗	⊗	X	⊗	⊗	⊗	⊗				⊗		⊗	⊗	⊗
6			⊗	⊗	⊗				⊗	X		⊗	⊗	⊗			⊗		⊗	⊗	X	X
7									⊗					⊗				⊗	⊗		X	X
8				⊗		⊗	⊗		⊗	X	⊗	X	⊗	⊗		f	f	X	X	X	X	X
9				⊗	X	⊗	⊗	⊗	⊗	X	⊗	⊗	⊗	⊗		⊗	⊗	⊗	⊗	X	X	X
10		⊗		⊗				⊗	⊗	X		⊗	⊗	⊗			⊗	⊗	⊗	X	X	X
11		⊗	⊗	⊗	X			⊗	⊗	X		⊗	⊗	⊗		⊗	⊗	⊗	⊗	X	X	X
12		⊗		⊗	X	⊗	⊗		⊗	X		⊗	⊗	⊗	X	f	f	⊗	⊗	X	X	X
13	(7)			⊗				⊗	⊗				⊗	⊗			⊗	X	X	X	⊗	⊗
14				⊗	X	X	X	⊗	X	X	X	X	X	X		⊗	⊗	X	X	X	X	X
15		⊗		X		⊗	⊗		⊗	X	⊗	⊗	⊗	X		⊗	⊗	X	X	X	X	X
16		⊗	⊗	⊗	X	⊗	⊗	⊗	⊗	X	⊗	X	⊗	⊗		⊗	⊗	⊗	⊗	X	X	X

X Areas diagnosed for treatment

⊗ Mastered after treatment

6th SIX WEEKS B PERIOD

	WHOLE					FRACTIONS					MIXED					DECIMALS						
	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	+	-	x	÷	R	%r	%÷
1				⊗	⊗	⊗		⊗	⊗	X	⊗	⊗	⊗	⊗			⊗				X	X
2				X	⊗				⊗	⊗		⊗	⊗	⊗		⊗	⊗	⊗	X	⊗	⊗	⊗
3			⊗	⊗	X	⊗		⊗	⊗	X	⊗	⊗	⊗	⊗			⊗		⊗	X	X	X
4		⊗		⊗	X	⊗	⊗	⊗	X	X	⊗	X	X	X	X	X	X	X	X	X	X	X
5			⊗	⊗	X	⊗				⊗	X	⊗	X			⊗	⊗	X	X	X	X	X
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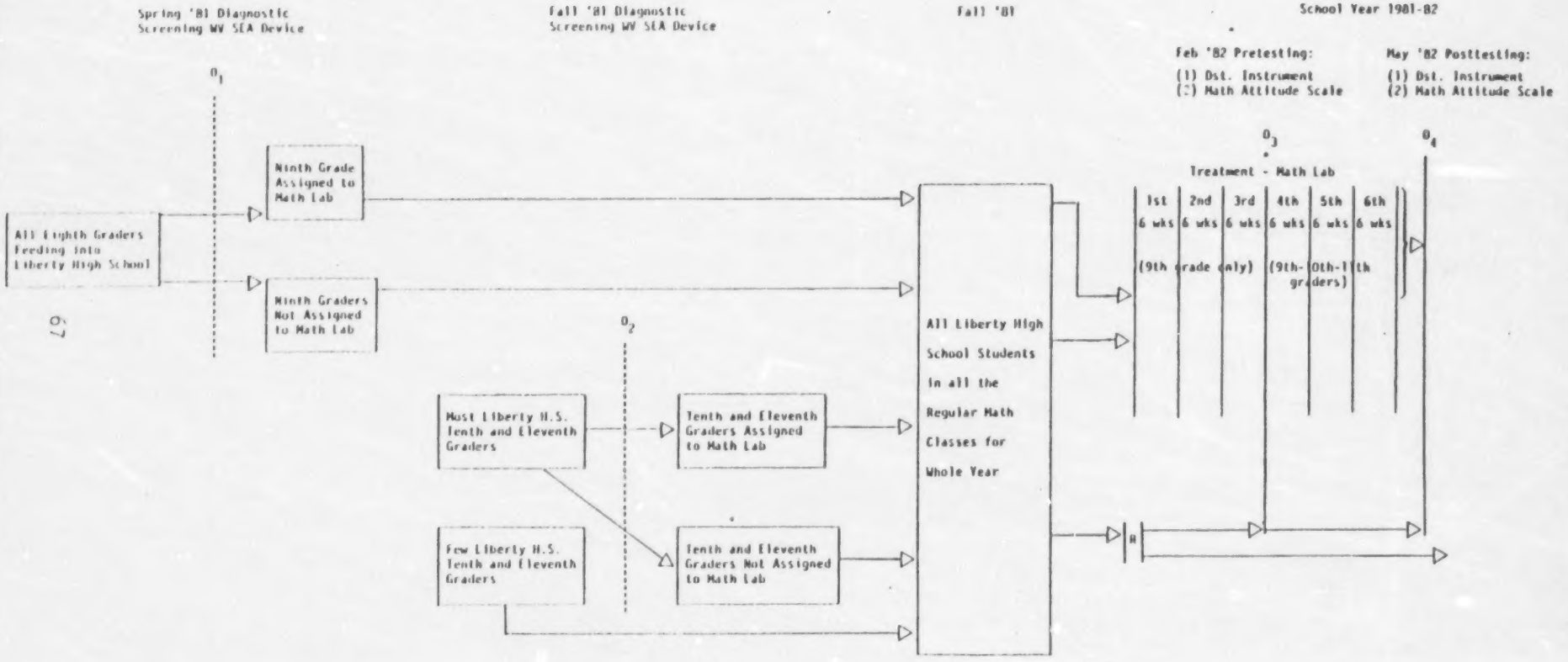
X Areas diagnosed for treatment

⊗ Mastered after treatment

APPENDIX J:

GRAPHIC OF RESEARCH DESIGN

Raleigh County Mathematics Laboratory Project
Graphic of Research Design


Spring '81 Diagnostic Screening WV SEA Device
Fall '81 Diagnostic Screening WV SEA Device
Fall '81
School Year 1981-82
Feb '82 Pretesting:
(1) Dst. Instrument
(2) Math Attitude Scale
May '82 Posttesting:
(1) Dst. Instrument
(2) Math Attitude Scale
O_1
O_2
O_3
O_4
All Eighth Graders Feeding into Liberty High School
Ninth Grade Assigned to Math Lab
Ninth Graders Not Assigned to Math Lab
Most Liberty H.S. Tenth and Eleventh Graders
Few Liberty H.S. Tenth and Eleventh Graders
Tenth and Eleventh Graders Assigned to Math Lab
Tenth and Eleventh Graders Not Assigned to Math Lab
All Liberty High School Students in all the Regular Math Classes for Whole Year
Treatment - Math Lab
1st 6 wks
2nd 6 wks
3rd 6 wks
4th 6 wks
5th 6 wks
6th 6 wks
(9th grade only)
(9th-10th-11th graders)
R

O = Observation
R = Randomization

*Note: Various administrations of WV SEA Device

Date: 2/5/81

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APPENDIX K:

NEWS RELEASES

One-Of-A-Kind Math Center At Liberty High

Raleigh County has the only state-funded math lab in West Virginia located at Liberty High School.

The lab has been equipped with two microcomputers for use by students who are having difficulty in basic skills and those taking college-bound courses.

Mrs. Ernestine Capehart, mathematics coordinator for the State Department of Education, spent two days in the lab recently instructing students in the basic commands they will be using with the computers.

She said the school can write its own programs as well as purchase programs for the computers.

Mrs. Charlene Hart, math lab instructor, said students will use the computers only under the supervision of a teacher. When not in use in the math lab, the computers will be available for use by other classes.

Mrs. Hart will be teaching four math lab classes a day with a different group of students rotating through the lab each six weeks.

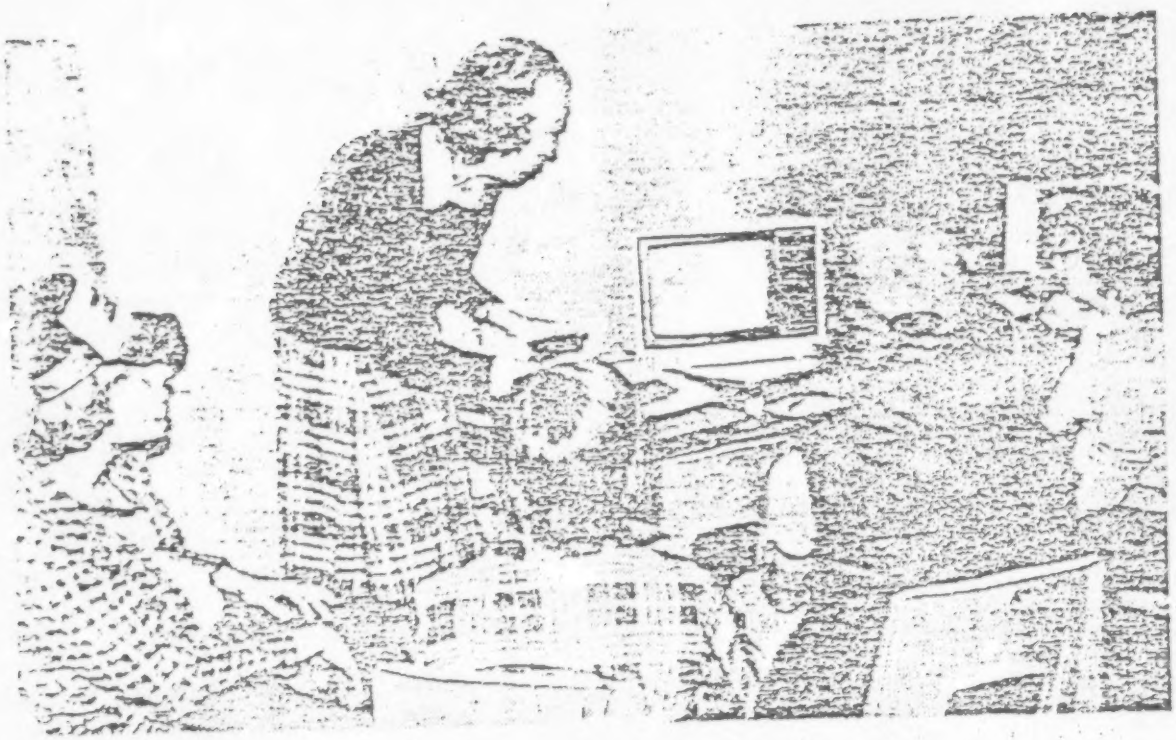
Diagnostic tests developed by Mrs. Capehart will help the school determine which students will benefit from the lab.

Mrs. Hart said advanced math students will be using the computers to write their own programs.

The math lab project was funded in the amount of $12,000 as a part of West Virginia's Basic Skills Improvement Program.

Secondary supervisor Marilyn Stone said the teacher will identify specific needs of the individual student and implement a specific program to meet each student's needs.

Tuesday, April 6, 1982



Mathematics Coordinator Ernestine Capehart instructs students in the computer

Liberty High Has Math Lab

Raleigh County has the only state-funded math lab in West Virginia.

The lab is located at Liberty High School and has been equipped with two microcomputers for use by students who are having difficulty in basic skills and those taking college-bound courses.

Ernestine Capehart, mathematics coordinator for the State Department of Education, spent two days in the lab recently instructing students in the basic commands they will be using with the computers.

She pointed out school personnel can write their own programs for the computers as well as purchase programs.

Charlene Hart, math lab instructor, said the students will use the computers under supervision only. When not in use in the math lab the computers will be available for use by other classes.

She will be teaching four math lab classes per day with a different group of students rotating through the lab each six weeks.

A diagnostic test developed by Mrs. Capehart will determine which students will benefit from the math lab. "From those scores we will pick out the students who have the most difficulties in math. Every student in the lab will have his own lesson plan for the day. Some may be doing fractions, others percentages and some may need a little refresher work in other areas. The comupters will have programs to meet those needs and students can punch in what assignment they will be doing for the day."

She explained, "Some of the advanced math students will be trying to write their own programs."

According to Marilyn Stone, secondary supervisor, the math lab project was funded in the amount of $12,000 as a part of West Virginia's Basic Skills Improvement Program.

"Materials will be developed and equipment and supplies will be selected to address individual as well as small group needs," Mrs. Stone said.

"Specific needs of the individual student will be identified and a specific program will be implemented to meet the needs."

She added an evaluation will be conducted of the math lab to determine its effect on the individual student and the school program.

Mrs. Stone said educators from across the state are invited to visit the lab.

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Raleigh County Schools

News & Views

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April 1982
Beckley, WV 25801

Printed by the Graphic Arts Department
Raleigh County Vocational-Technical Center

Learning Math

Raleigh School Has Only State-Funded Math Lab

Raleigh County has the only state-funded math lab in West Virginia located at Liberty High School.

The lab has been equipped with two microcomputers for use by students who are having difficulty in basic skills and those taking college-bound courses.

Mrs. Ernestine Capenart, mathematics coordinator for the State Department of Education, spent two days in the lab recently instructing students in the basic commands they will be using with the computers.

She said the school can write its own programs as well as purchase programs for the computers.

Mrs. Charlene Hart, math lab instructor, said students will use the computers only under the supervision of a teacher. When not in use in the math lab, the computers will be available for use by other classes.

Mrs. Hart will be teaching four math lab classes a day with a different group of students rotating through the lab each six weeks.

Diagnostic tests developed by Mrs. Capenart will help the school determine which students will benefit from the lab.

Mrs. Hart said advanced math students will be using the computers to write their own programs.

The math lab project was funded in the amount of $12,000 as a part of West Virginia's Basic Skills Improvement Program.

Secondary supervisor Marilyn Stone said the teacher will identify specific needs of the individual student and implement a specific program to meet each student's needs.

She said an evaluation system will be used in the math lab to determine its effect on the individual student and the school program.

Mrs. Ernestine Capehart instructs students in the basic commands they will be using with the two microcomputers in West Virginia's only state-funded math lab located at Liberty High School.

Teachers Studying Computers

"They're being used in the gifted program and in the math labs. It's the 'in thing' today in education," says Bob Lilly, adult program coordinator for the Raleigh County Vocational-Technical Center.

The "in thing" is computers in the classroom.

(See "Computers" Page 10)

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